Vol. 913 Number 3

OFFICIAL GAZETTE

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UNITED STATES PATENT OFFICE

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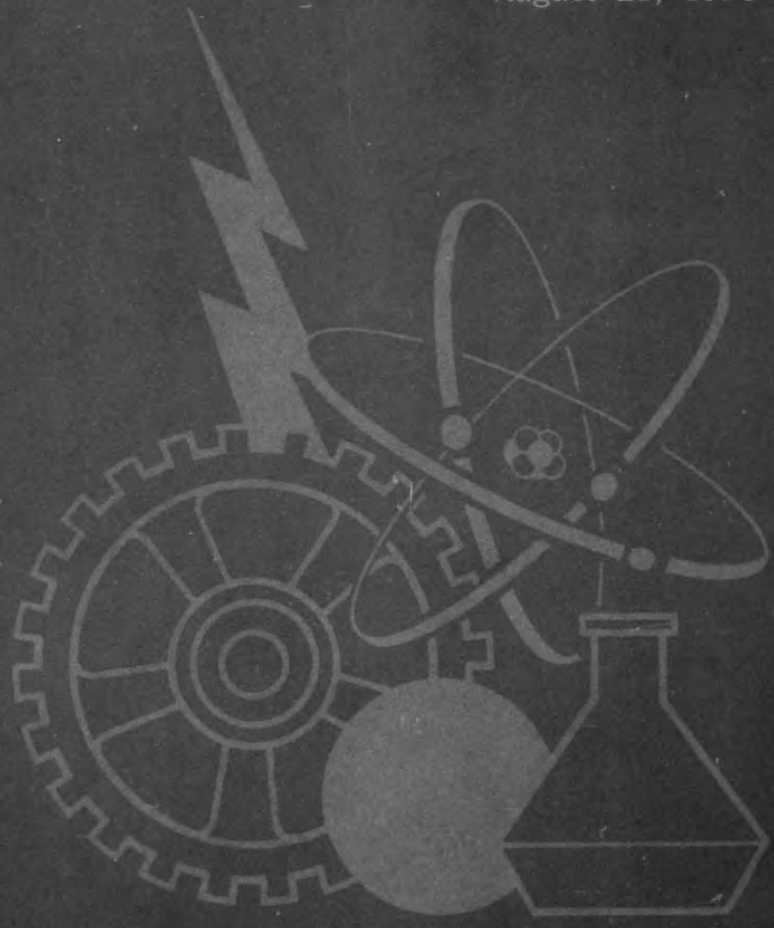
PATENTS

August 21, 1973



U. S. DEPARTMENT OF COMMERCE

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before September 7, 1973.

Kanter, Sidney S., 1064 Clinton Ave., Irvington, N.J. 07111
Lebrun, Antonio, Canadair Ltd., P.O. Box 6087, Montreal, Quebec, Canada
Martin, John C., Watergate 600 Bldg., Washington, D.C. 20037
Millman, Dennis G., PPG Industries, Inc., 1 Gateway Center, Pittsburgh, Pa. 15222
Murphy, Kevin P., 2151 Lincoln Ave., Apt. 7, Montreal, Quebec, Canada

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,661,084, J. J. Steffan, DOOR FRAMES; 2,678,843, same, KEEPER MECHANISM; 2,765,884, same, DRY WALL JAMB; 3,194,363, Steffan and Williams, DOOR FRAMES; 3,285,427, J. L. Williams, METAL DOOR JAMB STRIKE PLATE ASSEMBLIES, filed June 29, 1971, D.C., E.D. Mo. (St. Louis), Doc. 71C401(A), *Dolores Williams, also known as Dolores Rollhous* v. *Jelico Mfg. Co. and Jelna Tool and Mfg. Co.* Judgment filed and entered, Count 2 of complaint dismissed without prejudice, as well as defendants' first counterclaim for lack of jurisdiction. Count 1 of complaint found in favor of defendants and 2nd and 3rd counterclaims found in favor of plaintiff, Mar. 1, 1972. Alleged infringements stricken as to 2,765,884 and 3,285,427, by the plaintiff, Jan. 16, 1973.

2,678,843. (See 2,611,084.)

2,685,536, Starkey and Ransburg, METHOD FOR ELECTROSTATICALLY COATING ARTICLES; 2,794,417, same, APPARATUS FOR ELECTROSTATICALLY COATING ARTICLES; 2,893,893, W. W. Crouse, METHOD AND APPARATUS FOR ELECTROSTATIC COATING; 2,893,894, E. M. Ransburg, METHOD AND APPARATUS FOR ELECTROSTATICALLY COATING, filed Apr. 24, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c991, *Ransburg Electro-Coating Corp.* v. *King Industries Enameling Division.* Patents valid, parties agree King's use of a modified Ionic Model 25 equipment, wherein a ring type electrode was substituted for the original equipment cone-shape grid, did directly infringe United States Letters Patent Nos. 2,685,536, 2,794,417, 2,893,893 and 2,893,894. Defendant permanently enjoined. This judgment is entered on Ransburg's complaint against King. King's counterclaims against Ransburg are dismissed with prejudice. Cause of action set forth in the third-party complaint on file in this case, is dismissed without prejudice, Dec. 22, 1972.

2,761,177, B. Walters, MANUFACTURE OF ORNAMENTAL AND DISPLAY PLASTIC SHEETS, filed Feb. 7, 1973, D.C., S.D. Fla. (Miami), Doc. 73-212-C-JE, *Ben Walters* v. *Rotocast Plastic Products, Inc.*

2,765,884. (See 2,661,084.)

2,787,343, M. E. Mitchell, APPARATUS FOR SERVICING OVERHEAD EQUIPMENT; 3,095,945, same, OVERHEAD SERVICE UNIT, filed Feb. 13, 1973, D.C., S.D. Ind. (Indianapolis), Doc. IP73-C-72, *Lift-A-Loft Corporation* v. *Hubbard Mfg. Co., Inc. and John S. Hubbard.*

2,790,516, Wright and Butler, VEHICLE DISC BRAKE ASSEMBLY; 2,921,650, H. J. Butler, DISC BRAKE, filed Feb. 8, 1973, D.C., N.D. Ind. (South Bend), Doc. 73-S-20, *Dunlop Holdings Limited* v. *The Bendix Corporation.* Same, filed Feb. 7, 1973, D.C., E.D. Mich. (Detroit), Doc. 39637, *Dunlop Holdings Limited* v. *General Motors Corporation.*

2,794,417. (See 2,685,536.)

2,817,737, W. W. Morris, ELECTRICAL RESISTANCE NETS, filed July 31, 1970, D.C.N.J. (Newark), Doc. 1030-70, *Neoweld Corporation and The Connecticut Development Credit Corp.* v. *Cooper Electroheat Limited.* Consent judgment, patent valid and infringed, May 23, 1972

2,893,893. (See 2,685,536.)

2,893,894. (See 2,685,536.)

2,921,650. (See 2,790,516.)

2,968,164, A. W. Hanson, METHOD OF GENERATING SNOW, filed Feb. 16, 1973, D.C., E.D. Mich. (Bay City), Doc. 3260, *Alden W. Hanson* v. *Alpine Valley Ski Area, Inc. and Hedco, Inc.*

2,979,387, Easley and Hopkins, ETCHING, filed Feb. 7, 1973, D.C., S.D. Ind. (Indianapolis), Doc. IP73-C-58, *Dow Chemical Company* v. *Ball Corporation.*

2,994,237, H. Pelphrey, TOOTH FORMING TOOL; 3,015,243, J. C. Drader, TOOL FOR PRESSURE FORMING TOOTHED ELEMENTS, filed Nov. 27, 1970, D.C., E.D. Mich. (Detroit), Doc. 35712, *Michigan Tool Co.* v. *Rendall Tool Co., and Rendall Tool & Gage Co.* Consent judgment: plaintiff is owner of patent, defendant permanently enjoined, Jan. 31, 1973.

3,015,243. (See 2,994,237.)

3,095,945. (See 2,787,343.)

3,129,456, L. C. Renfroe, METHOD OF EVISCERATING SCALLOPS; 3,177,522, same, APPARATUS FOR EVISCERATING SCALLOPS; 3,528,124, Wenstrom and Gorton, Jr., METHOD OF SHUCKING SHELLFISH; 3,662,432, Wenstrom and Gorton, Jr., APPARATUS FOR EVISCERATING SCALLOPS; 3,665,554, same, METHOD OF EVISCERATING SHELLFISH, filed Jan. 17, 1973, D.C., M.D. Fla. (Orlando), Doc. 73-10-Orl-C, *Slade Gorton & Co., Inc.* v. *Robert A. and Walter G. Peavler and King & Co. Inc.*

2,682,092, F. A. Quiroz, FRUIT JUICE EXTRACTION; 3,162,114, Breton and Beck, APPARATUS FOR CORING AND PRESSING JUICE FROM FRUITS HAVING A RIND, filed Feb. 1, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-218-RJK, *Federated Machinery, Inc., Juice Tree, Inc. and Francisco A. Quiroz* v. *John Natalicio.*

3,177,522. (See 3,129,456.)

3,177,703, Waters, Helfer and Jones, METHOD AND APPARATUS FOR RUNNING AND TESTING AN ASSEMBLY FOR SEALING BETWEEN WELLHEAD CONDUITS; 3,179,448, M. R. Jones, WELLHEAD APPARATUS; 3,419,071, Williams and Gruller, UNDERWATER WELLHEAD APPARATUS; 3,481,396, same, CONNECTOR FOR UNDERWATER PIPELINES, filed Feb. 10, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-313-CC, *Vetco Offshore Industries, Inc. and Vetco Offshore, Inc.* v. *Cameron Iron Works, Inc.* Dismissal with prejudice as to U.S. Patents 3,177,703 and 3,179,448 and without prejudice as to Patents 3,419,071 and 3,481,396, Dec. 12, 1972. Same, filed Oct. 21, 1971, D.C., S.D. Tex. (Houston), Doc. 71-H-1153, *Cameron Iron Works, Inc.* v. *Vetco Offshore Industries, Inc. and Vetco-Texas, Inc.* Joint motion to dismiss complaint and order of dismissal filed and entered, Dec. 15, 1972.

3,179,448. (See 3,177,703.)

3,194,363. (See 2,661,084.)

3,265,427. (See 2,661,084.)

3,370,479, A. J. Van Noord, REMOTE CONTROL MIRROR; 3,467,684, same filed Jan. 31, 1973, D.C., E.D. Mich. (Detroit), Doc. 39588, *Andrew J. Van Noord, doing business as Kent Engineering* v. *Jervis Corporation.*

3,467,684. (See 3,370,479.)

3,419,071. (See 3,177,703.)

3,481,396. (See 3,177,703.)

3,528,124, Wenstrom and Gorton, Jr., METHOD OF SHUCKING SHELLFISH; 3,662,432, same, APPARATUS FOR EVISCERATING SCALLOPS; 3,665,554, same, METHOD OF EVISCERATING SHELLFISH, filed Jan. 17, 1973, D.C., M.D. Fla. (Orlando), Doc. 73-10-Orl-C, *Slade Gorton & Co. Inc.* v. *Robert A. and Walter G. Peavler and King & Co. Inc.* Same, filed Dec. 27, 1972, D.C., M.D. Fla. (Orlando), *Slade Gorton and Company, Inc.* v. *Willis Brothers of Florida, Inc.*

3,528,124. (See 3,129,456.)

3,662,432. (See 3,129,456.)
3,662,432. (See 3,528,124.)
3,665,554. (See 3,129,456.)
3,665,554. (See 3,528,124.)
3,682,092. (See 3,162,114.)

D. 222,352, Ferro and Brown, DISPOSABLE VIAL FOR BLOOD CELL COUNTING; Reg. No. 908,324 (ACCUVETTE), Coulter Diagnostics, Inc., filed Jan. 11, 1972, D.C. Mass. (Boston), Doc. 72-135-J, *Coulter Diagnostics, Inc.* v. *Elkay Products, Inc.* Consent judgment entered on Jan. 31, 1973.

Reg. No. 908,324. (See D. 222,352.)

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

National Institutes of Health, Chief, Patent Branch, Westwood Building, Bethesda, Md. 20014

Patent application 348,673. Ammonium Ion Specific Electrode. Filed Apr. 6, 1973. PC $3.25/MF $0.95.

Patent application 354,673. Respirator. Filed Apr. 26, 1973. PC $3.75/MF $0.95.

Patent application 347,702. Electrode Insertion Device for Neuroelectrical Recordings. Filed Apr. 4, 1973. PC $3/MF $0.95.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW., Washington, D.C. 20240

Patent application 350,421. Process for Recovering Elemental Sulfur From Aqueous Suspensions. Filed Apr. 12, 1973. PC $3/MF $1.45.

Patent application 350,444. Determination of Sulfate Using Ferric Ion-Selective Electrode. Filed Apr. 12, 1973. PC $3/MF $1.45.

Patent 3,733,255. Conversion of Municipal Refuse, Sewage Sludge and Other Wastes to Heavy Oil or Bitumen. Filed Oct. 30, 1970. Patented May 15, 1973. Not available NTIS.

Patent 3,733,187. Process for Converting Solid Wastes to Pipeline Gas. Filed June 7, 1971. Not available NTIS.

Patent 3,726,689. Animal Food From Raw Whole Fish. Filed Nov. 18, 1970. Patented Apr. 10, 1973. Not available NTIS.

Patent 3,730,728. Animal Food From Raw Whole Fish. Filed Nov. 18, 1970. Patented May 1, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 242,662. Optical Instruments. Filed Apr. 10, 1972. PC $3/MF $1.45.

Patent application 359,957. Noise Suppressor. Filed May 14, 1973. PC $3/MF $1.45.

Patent application 198,885. Ophthalmic Method and Apparatus. Filed Nov. 15, 1971. PC $3/MF $1.45.

Patent application 345,372. High Isolation RF Signal Selection Switches. Filed Mar. 27, 1973. PC $3/MF $1.45.

Patent application 359,039. Coherent Receiver Employing Nonlinear Coherence Detection for Carrier Tracking. Filed May 10, 1973. PC $4/MF 1.45.

Patent application 348,787. Voltage Monitoring System. Filed Apr. 6, 1973. PC $3/MF $1.45.

Patent application 353,162. Correlation Type Phase Detector. Filed Apr. 20, 1973. PC $3.25/MF $0.95.

Patent application 359,157. An Inverter Ratio Failure Detector. Filed May 10, 1973. PC $3.75/MF $1.45.

Patent application 359,156. A Device for Use in Loading Tension Members. Filed May 10, 1973. PC $3/MF $1.45.

Patent application 346,372. Signal Conditioner Test Set. Filed Mar. 30, 1973. PC $3/MF $1.45.

Patent application 347,952. Variable Resistance Constant Tension and Lubrication Device. Filed Apr. 4, 1973. PC $3/MF $1.45.

Patent application 348,422. Cermet Composition and Method of Fabrication. Filed Apr. 5, 1973. PC $3.75/MF $1.45.

Patent application 356,664. System for Depositing Thin Films. Filed May 2, 1973. PC $3/MF $1.45.

[FR Doc. 73-15675; Filed 7-31-73; 8:45 am]

Certificates of Correction for the Week of Aug. 21, 1973

D. 225,067	3,691,557	3,710,537	3,719,963
D. 225,712	3,692,442	3,710,718	3,720,175
Re. 27,447	3,692,536	3,710,757	3,720,303
Re. 27,632	3,692,668	3,710,763	3,720,321
3,474,625	3,693,182	3,710,775	3,720,695
3,486,912	3,693,313	3,710,823	3,720,883
3,565,901	3,693,704	3,710,926	3,720,886
3,567,450	3,694,292	3,711,002	3,721,148
3,576,182	3,694,483	3,711,220	3,721,211
3,578,115	3,694,967	3,711,285	3,721,373
3,578,128	3,695,097	3,711,315	3,721,442
3,602,418	3,695,224	3,711,397	3,721,567
3,607,311	3,695,487	3,711,410	3,721,592
3,607,866	3,695,849	3,711,476	3,721,677
3,607,904	3,695,911	3,711,530	3,721,719
3,607,909	3,696,031	3,711,576	3,721,786
3,609,728	3,696,091	3,711,592	3,721,832
3,610,742	3,696,581	3,711,622	3,722,214
3,617,263	3,697,163	3,711,945	3,722,634
3,619,415	3,697,178	3,712,031	3,722,946
3,624,129	3,697,400	3,712,535	3,723,001
3,625,779	3,697,527	3,712,640	3,723,008
3,625,951	3,697,530	3,712,804	3,723,070
3,629,024	3,697,785	3,712,935	3,723,147
3,630,050	3,697,950	3,713,249	3,723,165
3,630,359	3,698,089	3,713,294	3,723,322
3,632,589	3,699,256	3,713,305	3,723,471
3,632,597	3,699,981	3,713,338	3,723,508
3,635,131	3,700,232	3,713,523	3,723,577
3,635,702	3,700,686	3,713,554	3,723,737
3,637,840	3,701,280	3,713,666	3,723,761
3,642,958	3,701,389	3,713,941	3,723,953
3,643,221	3,701,644	3,714,033	3,724,347
3,645,233	3,701,765	3,714,156	3,724,472
3,645,952	3,701,799	3,714,160	3,724,523
3,646,144	3,701,972	3,714,195	3,724,545
3,650,642	3,702,176	3,714,273	3,724,552
3,651,059	3,702,269	3,714,311	3,725,061
3,651,149	3,702,564	3,714,491	3,725,275
3,651,987	3,702,875	3,714,856	3,725,370
3,652,355	3,702,999	3,714,875	3,725,429
3,652,681	3,703,083	3,714,929	3,725,457
3,653,444	3,703,097	3,714,988	3,725,483
3,655,382	3,703,393	3,715,086	3,725,771
3,655,659	3,703,504	3,715,163	3,725,765
3,658,696	3,703,745	3,715,632	3,725,769
3,660,175	3,704,127	3,715,710	3,725,837
3,663,549	3,704,560	3,715,758	3,726,137
3,665,762	3,704,962	3,715,787	3,726,527
3,668,255	3,705,011	3,715,906	3,726,542
3,668,704	3,705,335	3,715,917	3,726,622
3,671,691	3,705,899	3,716,084	3,726,631
3,672,900	3,705,957	3,716,273	3,726,923
3,672,903	3,706,739	3,716,288	3,726,930
3,674,487	3,707,162	3,716,347	3,726,967
3,675,794	3,707,477	3,716,479	3,726,998
3,676,541	3,707,539	3,716,632	3,727,015
3,676,599	3,707,776	3,717,134	3,727,016
3,678,567	3,708,113	3,717,255	3,727,098
3,680,789	3,708,199	3,717,386	3,737,128
3,681,280	3,708,216	3,717,519	3,727,136
3,681,406	3,708,277	3,717,791	3,727,144
3,682,960	3,708,435	3,717,899	3,727,844
3,684,014	3,708,514	3,717,947	3,727,932
3,685,323	3,708,531	3,717,957	3,728,083
3,685,714	3,708,591	3,718,052	3,728,099
3,686,171	3,708,611	3,718,121	3,728,212
3,686,316	3,708,678	3,718,545	3,728,214
3,687,380	3,708,723	3,718,668	3,728,324
3,687,456	3,709,093	3,718,721	3,728,327
3,689,219	3,709,439	3,718,791	3,728,430
3,689,492	3,709,528	3,718,865	3,728,432
3,689,693	3,709,579	3,719,016	3,728,793
3,689,883	3,709,678	3,719,142	3,728,908
3,690,383	3,709,828	3,719,176	3,729,381
3,690,819	3,709,952	3,719,281	3,729,700
3,690,976	3,709,976	3,719,390	3,729,816
3,691,184	3,710,117	3,719,492	3,730,317
3,691,544	3,710,279	3,719,772	3,740,541

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 4, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-30-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-01-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-03-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-01-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-23-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-27-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	11-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-23-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-17-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	11-17-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-01-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	7-05-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	10-18-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-25-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-01-72

Expiration of patents: The patents within the range of numbers indicated below expire during August 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,757,378 to 2,761,141, inclusive
Plant Patents..... Numbers 1,505 to 1,508, inclusive

REISSUES

AUGUST 21, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,736
METHOD OF SHAPING THE END OF A PIPE OF THERMOPLASTIC MATERIAL INTO A BELL

Karl Muhlner, and Karl Jirka, Munich, and Johann Gutlhuber, Irlbach, Germany, assignors to Kunststoffwerk Gebruder Anger GmbH & Co., Munich, Germany

Original No. 3,520,047, dated July 14, 1970, Ser. No. 568,508, July 29, 1966. Application for reissue Apr. 11, 1972, Ser. No. 243,094

Int. Cl. B23p *11/02, 17/00;* B29c *19/00*

U.S. Cl. 29—423 7 Claims

This disclosure relates to a mode of elastically deforming a thermoplastic pipe end to form an internal groove therein and assemble packing and supporting rings in the groove.

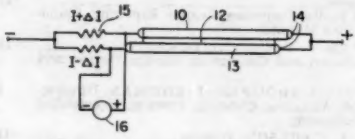
27,737
LIGHT SCANNING DEVICE UTILIZING PIEZOELECTRIC SEMICONDUCTOR MATERIAL

Yoh Mita, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Original No. 3,582,658, dated June 1, 1971, Ser. No. 841,904, July 15, 1969. Application for reissue Dec. 12, 1971, Ser. No. 211,129

Int. Cl. H01j *39/14*

U.S. Cl. 250—211 R 3 Claims



A solid-state light scanning device includes two rodlike crystal of piezoelectric semiconductor material disposed substantially parallel and offset with respect to one another, each provided with electrodes at the opposite ends, and a photoconductor sandwiched between the two crystals to form an integrated unit. Means are also provided to initiate electric fields in said crystals with a predetermined time difference.

27,738
PULSE POSITION MODULATION COMMUNICATIONS SYSTEM INCLUDING MEANS FOR SUPPRESSING ZERO-MODULATION SIGNAL COMPONENTS

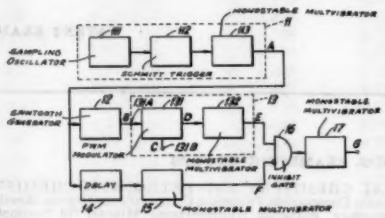
Takamichi Honma, Yasuhiro Toshitsuna, and Saburo Aoki, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Original No. 3,562,671, dated Feb. 9, 1971, Ser. No. 718,146, Apr. 2, 1968. Application for reissue Dec. 22, 1971, Ser. No. 210,717

Int. Cl. H03k *7/04*

U.S. Cl. 332—9 R 10 Claims

An improved pulse position modulator is described wherein selected pulses ordinarily representative of the zero signal level of the information to be transmitted are deleted. Deletion is accomplished by generating a pulse position modulated signal representative of the information signal and having a preselected pulse repetition rate,



with selected portions of the pulses therefrom deleted by use of another pulse train of the same repetition rate but delayed in time by an amount corresponding to the position of the pulse to be deleted.

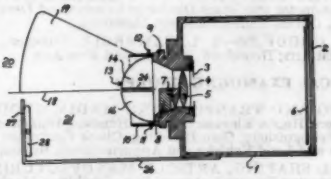
27,739
APPARATUS FOR MEASURING THE SPEED OF AN AUTOMOBILE

Carl Pedersen, Morsovej 8B, 2720 Vanlose, Denmark

Original No. 3,532,042, dated Oct. 6, 1970, Ser. No. 748,389, July 29, 1968. Application for reissue Apr. 27, 1972, Ser. No. 248,326

Int. Cl. G03b *17/24, 19/02*

U.S. Cl. 95—36 2 Claims



The speed of a car is measured by exposing a film twice by means of a camera, viz, when the car is in a first and a second position respectively. During the first exposure only the area of the film upon which the car and its nearest surroundings are projected is exposed and during the second exposure the remaining area of the film is exposed, viz, by projecting the car and its new surroundings upon the remaining area of the film. However, the two areas of the film overlap each other so that a photograph is obtained showing the car in two different positions driving on a lane wherein the lane appears as if it were photo-

graphed in the normal way and on which the distance between the two positions of the car can be measured. During both exposures a watch is projected upon the film in order to record the time for the exposures.

27,740

OSCILLATING FREE PISTON PUMP

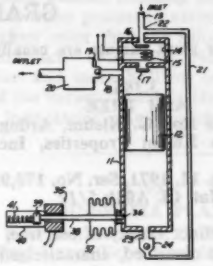
Mark Schuman, 101 G St. SW., Washington, D.C. 20024

Original No. 3,489,335, dated Jan. 13, 1970, Ser. No. 749,130, July 31, 1968. Application for reissue Jan. 12, 1972, Ser. No. 217,347

Int. Cl. F04b *19/24*

U.S. Cl. 417—207 46 Claims

A thermal powered pump formed of a cylinder, containing a free, oscillating piston, and having a heating chamber for providing above the piston, heated, expanding gases to be pumped for moving the piston downwardly to compress the gas located beneath it which, in turn raises piston so that the piston oscillates up and down, and with the pump outlet located above the piston for expelling the gas. A shunt interconnects the cylinder portions above and below the piston for carrying gas to the portion below



the piston for maintaining the center of oscillation of the piston with respect to the cylinder.

PLANT PATENTS

GRANTED AUGUST 21, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,385
ASH TREE

Carl H. Klehm and Roy G. Klehm, Arlington Heights, Ill., assignors to Klehm Properties, Inc., Arlington Heights, Ill.

Filed Aug. 11, 1971, Ser. No. 170,935
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—51 1 Claim

1. A new and distinct variety of ash tree, substantially as hereinshown and described, characterized particularly as to novelty by the unique combination of a rapid, vigorous, uniform and seedless habit of growth which requires no staking and only limited pruning, a wide angle crotching habit of the lateral branches, combined with a strong terminal leader, distinctive, narrow, lanceolate leaves which present a lacy appearance, an extremely waxy and shiny leaf cuticle which is thick and scorch resistant, and good winter hardiness as observed at Barrington and Arlington Heights, Ill.

3,386
DOGWOOD TREE

Mary B. Wakefield, 1465 Brush Hill Road, Milton, Mass. 02186

Filed Jan. 4, 1972, Ser. No. 215,441
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—51 1 Claim

1. A new and distinct variety of dogwood tree of the Japanese dogwood type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an upright and compact habit of growth which requires very little, if any, pruning or maintenance, attractive dark green neat foliage which turns in color to wine red in the fall (usually in the month of November in Milton, Mass.), attractive white flowers of medium size and having a greater bract count, varying from 6 to 9 bracts per flower, than is normal for the species, large edible fruit which turn from green to yellow to clear bright red in color and which particularly tend to attract birds, a distinctive golden brown winter color of the smooth bark of the twigs and young branchlets which are quite ornamental, and especial suitability for street, park and garden plantings.

3,387
DOGWOOD TREE

Mary B. Wakefield, 1465 Brush Hill Road, Milton, Mass. 02186

Filed Jan. 20, 1972, Ser. No. 219,582
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—51 1 Claim

1. A new and distinct variety of dogwood tree of the Japanese dogwood type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a relatively small and dainty tree habit, with a flat-topped but generally upright form of slender, gracefully sweeping branches, an exceptionally heavy floriferousness, with pure white blooms being borne mostly in triple clusters and occasionally in double clusters or sometimes singly, thereby giving the tree a striking and massive pure white color effect like a mantle of snow, an unusually heavy, prolonged and showy fruiting habit, with the fruit being borne mostly in loose triple clusters which ripen in succession over a period of 6 weeks or more (well into November in Massachusetts) and which give the tree a striking bright red overall color as the fruit matures, excellent hardiness to at least —20° F. without injury, and especial suitability for foreground accent of massed plantings of trees and shrubs, as well as for use near buildings and for lawn, courtyard and garden plantings and the like.

3,388
PEACH TREE

Arley H. Sylvester, deceased, late of Hotchkiss, Colo., by Roderick N. Stewart, Delta, Colo., executor, assignor to Stark Bros. Nurseries & Orchards Co., Louisiana, Mo.

Filed Feb. 8, 1972, Ser. No. 224,631
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—43 1 Claim

1. A new and distinct variety of peach tree of the yellow-fleshed, freestone, fruit-bearing type, substantially as herein shown and described, characterized particularly as to novelty by its general resemblance to its parent variety "Elberta," but being principally distinguished therefrom by the unique combination of a later fruit ripening habit usually ranging from about 10 to 14 days later than "Elberta," firm, clear yellow fruit flesh, with only a trace of pink color on the surface of the pit cavity, and complete absence of red color in the flesh as compared to the heavily stained red flesh near the pits of the fruit of "Elberta," an excellent fruit flavor, with less bitterness than the flavor of "Elberta" fruit, and good shipping qualities of the fruit.

3,389
KALANCHOE PLANT

James T. Irwin, Canyon, Tex., assignor to Irwin Greenhouses, Inc., Canyon, Tex.

Filed Feb. 16, 1972, Ser. No. 226,995
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a highly branched, sturdy, compact and upright habit of growth, medium sized, flexible foliage of moss green to fern green color, a consistent plant height ranging from about 12 to 15 inches tall under greenhouse conditions and a uniform blooming date, an ability to initiate and develop flower buds under high night temperatures of summer when other varieties fail, a profuse blooming habit, with the ability to respond to short day treatment, and with consequent capability of year-around flowering, a distinctive, attractive and uniform buttercup yellow flower color, superior resistance to root rot as compared with most other kalanchoe varieties, and long-lasting qualities as a potted plant.

3,390
APPLE TREE

Walter E. Raikes, Okanogan Mission, British Columbia, Canada, assignor to Columbia & Okanogan Nursery Co., Inc., Wenatchee, Wash.

Filed Feb. 28, 1972, Ser. No. 230,166
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—34 1 Claim

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an upright or columnar and exceptionally open habit of tree growth, with limited main limb development confined to a few limbs which have a very limited, if any, side shoot development, while providing an exceptionally strong tree framework capable of sustaining heavy loads

of fruit without bending, splitting, breaking or other damage attributable to the heavy weight of fruit borne thereby, a somewhat drooping leaf habit, with the leaves being somewhat larger in size, more abundant in number and deeper green in color (near Ivy Green) than those of the parent variety, a spur type fruiting habit, with the spurs being more numerous per unit length of wood and more extensively distributed throughout the tree than in any other known spur type apple tree variety, a remarkably large fruit size in relation to heaviness of fruit crop to an exceptional degree not found in other spur type apple varieties, with the fruit being borne closer together and virtually completely covering each limb along substantially the full length thereof, a good blushed solid bright red fruit color (Amaranth Red) generally comparable to the fruit of the parent variety, "Red McIntosh" (Summerland Strain), extremely good productivity evidenced by heavy fruit crops consistently produced annually even when "Red McIntosh" and other sports thereof bear poorly or almost no fruit at all on occasion in the same orchard, and superior frost resistance of the fruit buds.

3,391

CARNATION PLANT

Leonard E. Carrier, 1911 Sheridan Road, Encinitas, Calif. 92024

Filed Mar. 9, 1972, Ser. No. 233,366
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—72 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a very vigorous and free-breaking plant habit, with strong and straight stems, superior resistance to soil-borne diseases such as *Fusarium oxysporium* and *roseum* and other root-rots such as damping off and water molds and the like, large, serrated flowers which open fully without bursting the calyx and causing "splits," a distinctive and attractive pink flower color which fades evenly and beautifully, a distinctive and pleasing rose-type flower fragrance, and good heat tolerance which is superior to that of the parent lines and the so-called "Sim" varieties.

3,392

POINSETTIA PLANT

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ranch Ecke, Encinitas, Calif.

Filed Mar. 30, 1972, Ser. No. 239,831
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinctive variety of poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a short-growing and compact plant habit, a uniform and fast rooting habit, a self-branching habit resulting in multiple blooms without pinching off the terminal buds as required for other poinsettia varieties, attractive green foliage of lighter color than the foliage of such varieties as "Paul Mikkelsen" (Plant Pat. No. 2,328), a distinctive, attractive and more brilliant red bract color than the bracts of the variety "Annette Hegg" (Plant Pat. No. 2,962), and long-lasting plant qualities.

3,393

POINSETTIA PLANT

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ranch Ecke, Encinitas, Calif.

Filed Mar. 30, 1972, Ser. No. 239,832
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct variety of poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a short-growing and compact plant habit, a uniform and fast rooting habit, a self-branching habit resulting in multiple blooms without pinching off the terminal buds as required for other poinsettia varieties, attractive green foliage of lighter color than the foliage of such varieties as "Paul Mikkelsen" (Plant Pat. No. 2,328), a distinctive and attractive pink on white marbled bract color, and long-lasting plant qualities.

3,394

POINSETTIA PLANT

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ranch Ecke, Encinitas, Calif.

Filed Mar. 30, 1972, Ser. No. 239,833
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—86 **1 Claim**

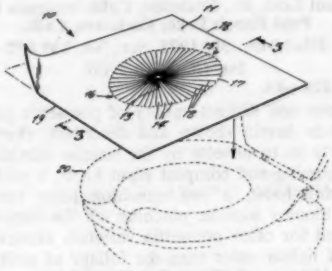
1. A new and distinct variety of poinsettia plant, substantially as herein shown and described characterized particularly as to novelty by the unique combination of a general resemblance to the variety known as "Annette Hegg" (Plant Pat. No. 2,962), but having a very short growth habit, with very thick stems, a uniform and fast rooting habit comparable to "Annette Hegg," fewer stems and bracts than "Annette Hegg," larger and fleshier leaves of a much darker green color than those of "Annette Hegg," a good bright red bract color, with some bluish tones, a more rounded bract form, very large and more prominent cyathea, and long-lasting plant qualities.

PATENTS

GRANTED AUGUST 21, 1973

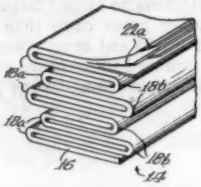
GENERAL AND MECHANICAL

3,753,262
GERM PROTECTOR TOILET SEAT COVER
Benjamin Watsky, 150-15 79th Ave., Flushing, N.Y.
Filed Jan. 19, 1972, Ser. No. 218,901
Int. Cl. A47k *13/14, 13/16*
U.S. Cl. 4—243 **2 Claims**



A disposable toilet seat cover of improved design so to prevent contact of a person's body with the toilet seat on which he sits, the cover consisting of a tissue paper panel for placement upon the toilet seat, and a center of the panel having a large number of radially extending slits so to form a great many triangular tabs that hang down into the toilet bowl and which thus cover the inner periphery of the toilet seat, while at the same time forming a central oval shaped opening.

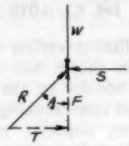
3,753,263
PILLOW CONSTRUCTION
Arnold L. Willis, Chicago, Ill., assignor to MSL Industries, Inc., Chicago, Ill.
Filed Mar. 4, 1971, Ser. No. 121,102
Int. Cl. A47g *9/00;* **A47c** *27/00*
U.S. Cl. 5—337 **11 Claims**



A polygonal pillow tick having a polygonal batt of corresponding configuration enclosed therein and the pillow tick and batt cooperate to produce a three-way or four-way taper on the pillow. The pillow batt includes a plurality of layers of material arranged in superimposed layers with at least some of the layers terminating at a location spaced from a first of the edges of the tick so as to produce a taper adjacent the first edge of the pillow. Each of the layers of material forming the batt includes a plurality of plies of a web of compressible material with at least some of the plies terminating at a location spaced from a second edge adjacent the first edge to produce a taper adjacent the second edge.

In one embodiment, the pillow has four sides and the third side has several of the plies of each layer spaced therefrom while all of the layers are located in a substantial common plane along the fourth edge to produce a pillow having a wedge-shaped configuration in one transverse dimension and an oval configuration in a second perpendicular dimension. In a second embodiment, the pillow has four edges and some of the plies of each layer are spaced from the third edge as well as the first edge while some of the layers are spaced from the fourth edge as well as the first edge to produce an oval cross-sectional configuration in two perpendicular directions transverse to the thickness of the pillow.

3,753,264
SCALP RELAXATION PILLOW
George H. Grenier, 1019 Michigan Ave., Ann Arbor, Mich.
Filed Sept. 28, 1971, Ser. No. 184,433
Int. Cl. A47g *9/00*
U.S. Cl. 5—338 **7 Claims**

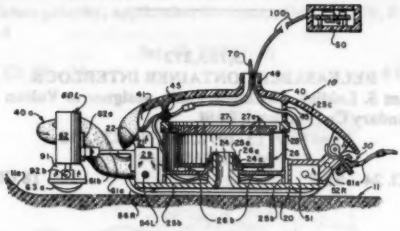


Based upon the principle that the continual and prolonged downward pull by the neck muscles, facial muscles and facial skin upon the scalp constricts the scalp blood vessels which nourish the hair roots, this hollow pillow in response to the weight of the user's head sets up a counter-acting upward force which counteracts the downward pull of the facial skin and consequently reduces the constriction of these blood vessels which feed the scalp and hence nourish the hair roots therein. To this end, the pillow is made of resilient foam plastic material with laterally-extending parallel air chambers separated from one another by laterally-disposed upwardly and rearwardly-inclined yielding partition walls. The weight of the user's head produces a downward force which causes the slanting front and rear walls and partition walls to be tilted downwardly and rearwardly thereby producing an upwardly and rearwardly-inclined force which includes a horizontal component acting toward the top of the head and thereby counteracting the pull of the neck muscles, facial muscles and facial skin toward the chin of the user.

3,753,265
TRANSLATABLE SUCTION CLEANING VEHICLE
Stanley S. Wulc, 1027 Washington Ln., Rydal, Pa.
Continuation-in-part of Ser. No. 124,318, March 15, 1971, Pat. No. 3,676,885. This application Sept. 10, 1971, Ser. No. 179,515
Int. Cl. E04h *3/20;* **A47l** *5/00*
U.S. Cl. 15—1.7 **8 Claims**

An improved translatable suction cleaning vehicle which is adapted to moveably interface with a bottom surface of a pool and remove extraneous particulates therefrom. The improved cleaner incorporates suction inlet mechanisms, driving and sensing means for cooperation with logic and control mechanisms within a control box located external to and substantially displaced from the main body of the cleaner vehicle.

An improvement to the cleaning vehicle provides for a plurality of mercury switches to act as the sensing means. When an obstacle is struck, the mercury switches are inclined and actuate the remotely positioned logic and control mechanisms. A



further improvement to the vehicle provides for a driving mechanism which is manually controlled by an operator wherein the appropriate logic circuitry is removed from the logic and control mechanism.

3,753,266

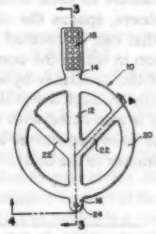
EDUCATIONAL ORAL HYGIENE DEVICE FOR YOUNG CHILDREN

Robert C. Ceniceros, 10 Hazel St., Larkspur, Calif.

Filed Aug. 3, 1971, Ser. No. 168,696

Int. Cl. A46b *15/00*; A61j *17/00*

U.S. Cl. 15—110 **2 Claims**



An oral hygiene device is provided with a handle member, a tooth cleaning portion and a teether member. Support members may be provided intermediate the handle member and the teether member.

3,753,267

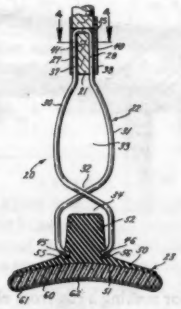
CLEANING MOP

John W. Johnson, Sr., 7515 State St., East St. Louis, Ill.

Filed Mar. 22, 1971, Ser. No. 126,806

Int. Cl. A47l *17/02*; B25g *3/38*

U.S. Cl. 15—210 R **6 Claims**



A cleaning mop for cleaning bathtubs and the like including a handle, a flexible cleansing pad, and means for releasably mounting the cleansing pad at one end of the handle to pivot about its diametrical axis with sufficient frictional engagement to hold the cleansing pad at any selected angle with respect to the handle when not acted upon by external forces.

3,753,268

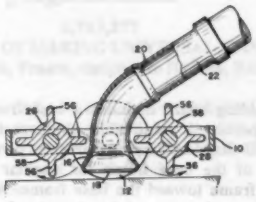
VACUUM CLEANER SUCTION TOOL WITH OPPOSITELY ROTATING PILE AGITATORS FOR CLEANING DEEP PILE SHAG RUGS

Frank K. Bayless, Darien, Conn., assignor to Consolidated Foods Corporation, Greenwich, Conn.

Filed Dec. 3, 1971, Ser. No. 204,548

Int. Cl. A47l *9/04*

U.S. Cl. 15—377 **4 Claims**



In accordance with the present invention there is provided a suction cleaning tool having an elongated suction nozzle on either side of which and closely adjacent thereto, is a rotatably mounted member for contacting the pile of the rug. These members are caused to rotate in mutually opposite directions with their lower sides turning away from the nozzles.

The nozzle and rotating members depend from a base wyich is provided with means, such as wheels or runners at opposite ends thereof, for movably supporting the tool on the rug. The rotating members may be driven by an electric motor or by the wheels through suitable drives which rotate them in opposite directions.

3,753,269

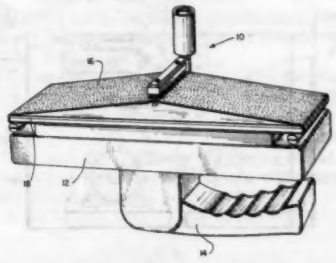
ABRASIVE CLOTH CLEANER

Ronald R. Budman, 31 Walnut St., Milton, Pa.

Filed May 21, 1971, Ser. No. 145,643

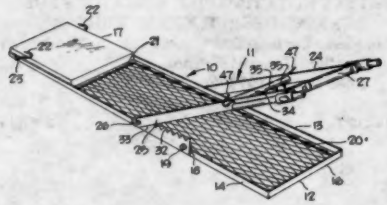
Int. Cl. B24b *53/02, 53/10*

U.S. Cl. 15—160 **5 Claims**



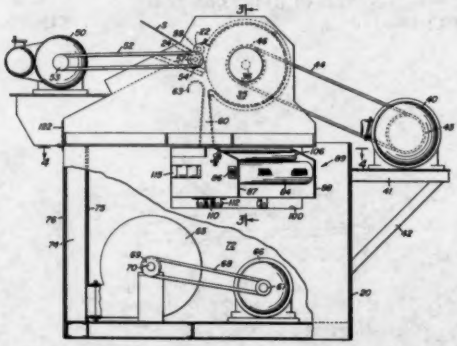
A tool for cleaning abrasive paper. A bar having a narrow top edge is fixed to a handle, the handle also carrying a brush. The bar is inserted beneath abrasive paper to open the clogged areas, the brush then displacing the debris between the abrasive particles.

3,753,270
FISH AND GAME HOLDING BOARD
Werner J. Hellebusch, Rt. 2, Box 30, Marthasville, Mo.
Filed Sept. 7, 1971, Ser. No. 178,181
Int. Cl. A22c *25/00*
U.S. Cl. 17—70 **5 Claims**



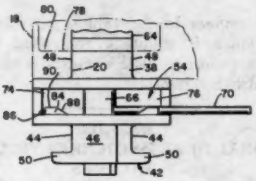
This holding board includes a base frame having parallel sides supporting a removable platform therebetween. The arms of a U-shaped clamping frame are pivotally connected to the sides of the base frame for angular movement of the clamping frame toward the base frame. A clamping bar extends between the arms of the clamping frame and is adapted to clamp fish to the platform. One of the sides of the base frame and an associated arm of the clamping frame provide scissor action cutting edges for sectioning fish and game. The base frame and the clamping frame include selectively spaced hooks which are attachable to opposite ends of a carcass to extend said carcass for skinning.

3,753,271
FLUFFING MACHINE FOR PRODUCING WEBS OF VARIOUS WIDTHS
Douglas M. McBean, Pittsford, N.Y., assignor to Surgical Specialties Corporation, East Rochester, N.Y.
Filed May 10, 1971, Ser. No. 141,766
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 **5 Claims**



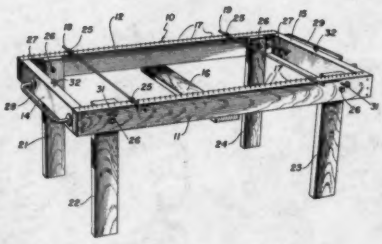
A random web forming machine having a lickerin and a condenser designed to produce a web of one width is constructed so as to produce a web of any desired narrower width. The fibers are doffed from the lickerin into a duct, which is of the same width as the lickerin but which delivers the doffed fibers onto an endless foraminous condenser belt that is mounted so that the direction of travel of the belt can be adjusted angularly with reference to the mouth at the discharge end of the duct. Different widths of webs can be produced by varying the direction of travel of the belt with reference to the discharge opening of the duct.

3,753,272
RELEASABLE CONTAINER INTERLOCK
William S. Laidley, Piedmont, Calif., assignor to Vulcan Steel Foundary Co., Oakland, Calif.
Filed Mar. 13, 1972, Ser. No. 233,973
Int. Cl. B65j *1/04*
U.S. Cl. 24—81 E **18 Claims**



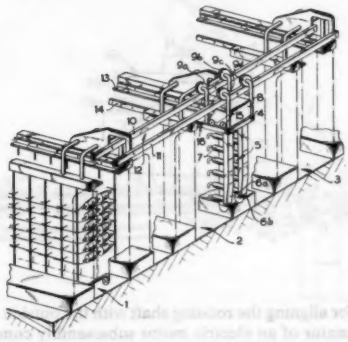
Apparatus for releasably locking large ocean-type vertically stacked cargo containers to each other. A body is disposed between the containers, spaces the containers apart and is fitted with a cone that can be rotated from an open position into a locked position in which the cone engages an undercut in corner fittings of the container by actuating a handle that protrudes horizontally through a slot-like opening in a side of the body. The body is also fitted with means to secure it to a corner fitting of the lower container at least while the cone locks the upper container to the body.

3,753,273
RUG FRAME
Minnie M. Roberts, Quaker Hwy., Rt. 146A, Uxebridge, Mass.
Filed Sept. 23, 1971, Ser. No. 183,043
Int. Cl. D03d *29/00*
U.S. Cl. 28—15 **8 Claims**



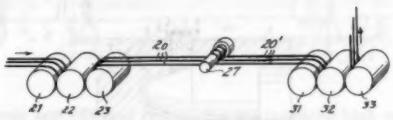
A rug frame for making a rug from elongated strips of flexible material, the frame having rods and a series of pins for arranging twine in rows between the rods on which the strips of material are twisted.

3,753,274
CREEL FOR TEXTILE MACHINES
Gerhard Koslowski, Rheydt-Odenkirchen, Germany, assignor to W. Schlafhorst & Co., Monchengladbach, Germany
Filed Oct. 1, 1971, Ser. No. 185,569
Claims priority, application Germany, Oct. 2, 1970, P 20 48 529.4
Int. Cl. D03j 1/16
U.S. Cl. 28—34 4 Claims



A creel has a dolly for receiving a tying device on the way from one creel to another. The dolly transports the tying device to other creels.

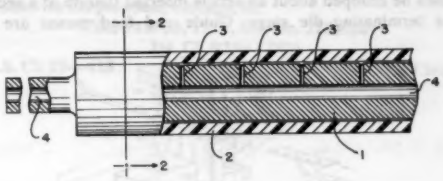
3,753,275
DRAW-CRIMPING TEXTILE FILM STRANDS
Robert K. Stanley, 620 Meadowvale Ln., Media, Pa.
Continuation-in-part of Ser. No. 822,429, May 7, 1969, Pat. No. 3,570,083, which is a continuation-in-part of Ser. Nos. 678,428, , Pat. No. 3,462,814, and Ser. No. 302,758, , Pat. No. 3,376,622, Continuation-in-part of Ser. No. 846,457, July 31, 1969, which is a continuation-in-part of Ser. No. 835,883, June 9, 1969, Pat. No. 3,551,254, which is a continuation-in-part of Ser. No. 650,762, July 3, 1967, abandoned, which is a continuation-in-part of Ser. No. 349,338, March 8, 1964, Pat. No. 3,348,283. This application Mar. 15, 1971, Ser. No. 124,213
Int. Cl. D02g 1/12
U.S. Cl. 28—72.14 9 Claims



Drawable textile film strands are treated by drawing the same to increased length and compressively crimping the drawn material, both steps being carried out in essentially continuous manner with a minimum of time and space therebetween.

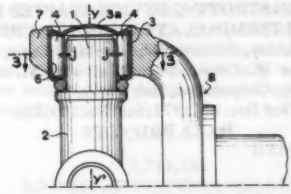
3,753,276
CALENDER ROLL COVER
Kenneth E. Reisch, 200 Princeton Ave., Reading, Pa.
Continuation-in-part of Ser. No. 18,380, March 13, 1970, abandoned, which is a continuation of Ser. No. 686,422, Nov. 29, 1967, abandoned. This application Dec. 27, 1971, Ser. No. 212,613
Int. Cl. B21b 31/08
U.S. Cl. 29—129.5 5 Claims

A calender roll comprising a polymeric roll cover adapted to be secured in frictional engagement with a rigid mandrel under static conditions is provided that will permit relative



movement between the roll and the cover under operating conditions.

3,753,277
METHOD OF MAKING UNIVERSAL JOINTS
Alfred Pitner, Paris, France, assignor to Nadella, Rucil-Malmaism, France
Division of Ser. No. 883,147, Dec. 8, 1969, Pat. No. 3,660,989. This application May 4, 1972, Ser. No. 250,135
Claims priority, application France, Jan. 24, 1969, 6901314
Int. Cl. B23p 11/00
U.S. Cl. 29—148.4 A 11 Claims



Universal joint in which the needle bearing cup surrounding each trunnion of the cross member of the joint has a non-circular cross-sectional shape so that the passage for the needles is smaller in the zones in which the forces are transmitted by the joint than in the rest of the passage for the needles. This is achieved by an interaction between the branch of the material of the yoke surrounding the bore and the cup which deforms the cup in the desired manner. A method is disclosed for achieving this result.

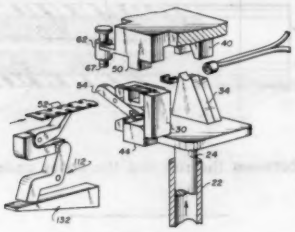
3,753,278
SOLDER COATED WIRE
Hachiro Hamaguchi; Misao Sakashita, and Mamoru Koyama, all of Osaka-shi, Japan, assignors to Tatsuta Electric Wire & Cable Co., Ltd., Osaka City, Japan
Division of Ser. No. 22,016, March 23, 1970, Pat. No. 3,644,115. This application Nov. 18, 1971, Ser. No. 200,044
Int. Cl. B32b 15/02, 15/20
U.S. Cl. 29—197 1 Claim

Tin-lead alloys used for soldering and plating metal wires are improved in their resistance to oxidation when they contain a small amount of aluminum.

3,753,279
TERMINAL FORMING & TERMINATING APPARATUS
Daniel Eppler, Toms River, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Apr. 13, 1971, Ser. No. 133,555
Int. Cl. H01r 43/04
U.S. Cl. 29—203 D 19 Claims

A compact, conveniently manipulable, multistage terminating apparatus arranged to successively selectively form ter-

minating devices from generally flat, pre-blanked, deformable, interconnected elements readily storable therewithin. A first die stage is arranged to suitably deform a portion of a flat element fed thereto into a wire receiving ferrule which may then be crimped about an article inserted therein at a second or terminating die stage. Guide and feed means are ap-



propriately disposed adjacent the reciprocally operable, progressive die sets for directively advancing a length of the deformable elements therethrough. Severing means are provided for separating a selective one of the terminated elements from the remainder thereof. The elements may be conveniently stored in and dispensed from storage means disposed adjacent the guide means.

3,753,280

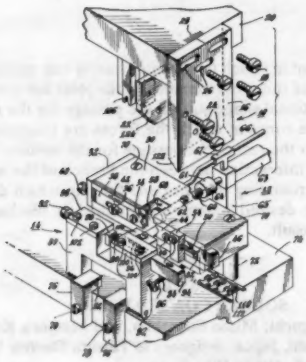
INSULATION STRIPPING DEVICE ADAPTED FOR USE WITH TERMINAL ATTACHING MACHINE

Hurley J. Blakeney, Gilbertsville; Harold V. Lowe, Kirkwood, and Gunther W. Ottens, Deposit, all of N.Y., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Dec. 17, 1971, Ser. No. 209,226

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 D **12 Claims**



A device for stripping a selected length of insulation from a conductor which device is adapted for use with a machine for attaching terminals to the conductor. A pair of camming elements, such as inclined planes, are mounted for movement with a terminal applying member. As the member moves toward a terminal applying position, a first of the inclined planes is operative to actuate an insulation cutting means and a conductor gripping means. Further movement of the terminal applying member moves the second inclined plane into a position to transfer the gripping means away from the cutting means, effectively stripping the severed insulation from the conductor and positioning the bare end of the conductor to be attached to a terminal by the terminal applying member. On the return cycle of the terminal applying member, a pneumatic mechanism is actuated to release the severed piece of insulation and to remove the insulation from the mechanism.

3,753,281

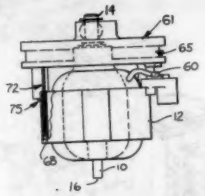
MEANS AND METHOD FOR ALIGNING MOTOR ASSEMBLY

Robert G. Arlt, and Timothy W. Hennessey, both of Springfield, Ohio, assignors to Robbins & Myers, Inc., Springfield, Ohio

Filed Oct. 23, 1970, Ser. No. 83,430

Int. Cl. H02k *15/02*

U.S. Cl. 29—205 R **5 Claims**



Means for aligning the rotating shaft with the outside diameter of the stator of an electric motor subassembly comprising positioning the stator in a unique fixture, applying an adhesive to the mating surface of the stator, placing the head assembly which has been provided with an opening for receiving said shaft onto said stator in aligned relation thereto until said adhesive sets or cures.

3,753,282

MEMBER FOR USE IN THE SHAPING OF COIL ENDS OF STATOR WINDINGS DISPOSED IN SHEET METAL STATOR ASSEMBLIES OF ELECTRICAL MACHINES

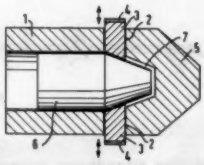
Klemens Wiehl, Nuernberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 3, 1972, Ser. No. 231,483

Claims priority, application Germany, Mar. 15, 1971, G 71 09 670.3

Int. Cl. H02k *15/00*; B23p *17/00*

U.S. Cl. 29—205 D **5 Claims**

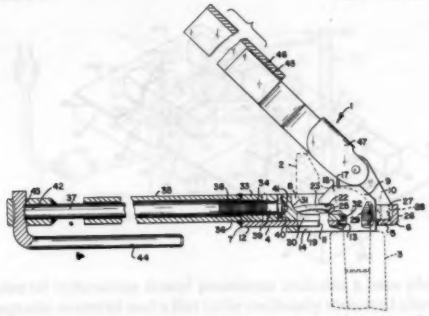


A member for use in the shaping of coil ends of stator windings disposed in sheet metal stator assemblies of electrical machines employing a hollow body member which carries at least one, preferably a plurality of radially extensive and retractable arms which may be moved radially outwardly, for example, by means of an axially movable plunger engageable with such arms whereby the same may be disposed in close relation to the ends of the coil to be formed, at least the outer portions of such arms comprising a material of good electrical conductivity with the radial thickness of such material corresponding at least to the depth of penetration of induced eddy currents resulting from current flow through the winding, induced, for example, by a capacitive discharge.

3,753,283
ELECTRODE TIP EXTRACTING TOOL

Rex H. Dyer, Independence, Mo., and Lauren W. Burnett, Dubuque, Iowa, assignors to Dyer Weld Tool Corp., Lexington, Mo.

Filed Apr. 24, 1972, Ser. No. 246,612
Int. Cl. B23p 19/04
U.S. Cl. 29—267 9 Claims

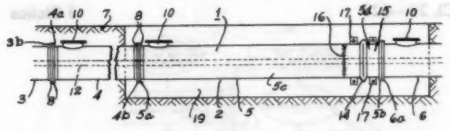


A tool for extracting electrode tips from the holder of a welding machine includes clamping jaws cooperating with a rigid jack-saddle which is forced away from the jaws by a pair of cams simultaneously actuated by an elongated handle. An upwardly open cavity bounded by the cams contains the jaws and is adapted to receive either straight or off-set electrode tips for extraction.

3,753,284
METHOD FOR REPAIRING INSULATED HIGH VOLTAGE LINE

Willi Olsen, and Klaus Schlosser, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 15, 1971, Ser. No. 180,614
Claims priority, application Germany, Sept. 30, 1970, P 20 49 013.5
Int. Cl. H02g 1/00; F16l 55/18
U.S. Cl. 29—401 7 Claims

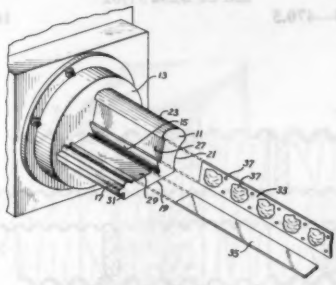


Simple and efficient repair of a gas insulated high voltage line, wherein the high voltage line and the surrounding insulating gas are encased by a plurality of rigid, tubular, gas tight, metallic casing sections generally fixed in position and arranged in end to end abutment, is made possible by the method of severing one of the casing sections into several pieces by such means as to allow removal of the severed section from between the adjacent abutting sections and replacing the severed casing section with a replacement section having a deformable portion which allows variation in the length of that section over the range of free play required for insertion between the fixed adjacent sections. The high voltage line will be disconnected to allow removal of the severed section. A replacement section comprises a tubular member having ends interconnectable with adjacent mating end portions of an opened line and having a deformable circumferentially extending wall section displaced radially from the surface of said section. A repair piece including the deformable portion may be attached to a piece of the severed section to make up the replacement section.

3,753,285
METHOD OF FORMING A DECORATIVE PICTURE FRAME

Harry R. Gewertz, Whittier, Calif., assignor to Intercraft Industries Corporation, Chicago, Ill.

Filed Feb. 23, 1972, Ser. No. 228,520
Int. Cl. B23p 17/00
U.S. Cl. 29—425 4 Claims

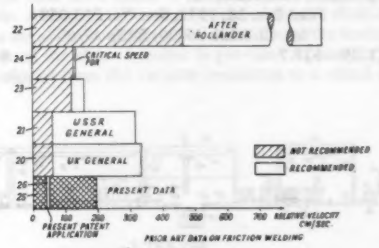


A method of forming a decorative picture frame including the steps of extruding an elongated thermoplastic molding having a formed longitudinal groove, providing an elongated strip having a decorative surface and adapted to be received in the groove, attaching the decorative strip to the molding, cutting the molding into predetermined lengths and assembling the lengths into a frame.

3,753,286
LOW SPEED FRICTION WELDING

Rodger H. Lilly, Cambridge, and Colin R. G. Ellis, Newton, both of England, assignors to The British Aluminum Company, Limited, London, England

Filed Aug. 5, 1970, Ser. No. 61,076
Claims priority, application Great Britain, Apr. 11, 1970, 17,776/70; Aug. 21, 1969, 39,919/69
Int. Cl. B23k 27/00
U.S. Cl. 29—470.3 18 Claims

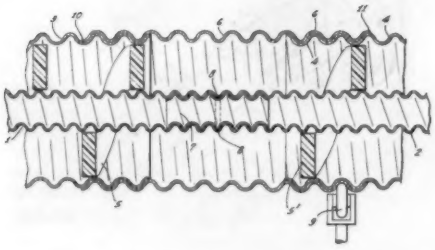


This disclosure relates to the friction welding of dissimilar metals, and provides a method of friction welding together two faces of two members formed of dissimilar metals, the method comprises causing relative rotation between the two faces while applying load between the two faces in a direction axial of the rotation and maintaining that axial load and rotation for a determined period of time, wherein the maximum relative velocity between the faces during the rotation is below 60 centimeters per second.

3,753,287
METHOD OF INTERCONNECTING TWO COAXIAL TUBE SYSTEMS

Gerhard Ziemek, Hannover, and Friedrich Schatz, Langenhagen, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Sept. 15, 1971, Ser. No. 180,796
Claims priority, application Germany, Sept. 21, 1970, P 20 46 331.4
Int. Cl. B23k *31/02*
U.S. Cl. 29—470.5 10 Claims

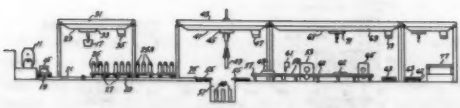


Method of interconnecting two coaxial tube systems, each having at least two corrugated coaxial tubes, by providing innermost tubes of the two systems to be interconnected and at slightly smaller or larger diameter, respectively in or on the end portions of the said two innermost tubes in corrugation contour matching and fitting relation; bonding the axial ends of the first sleeve or of the two innermost tubes respectively to the two innermost tubes or both first sleeves; telescoping a second sleeve of slightly smaller or larger diameter than the next, outer tubes of each system in corrugation receiving relation to the axially displaced ends of the outer tubes, bonding the second sleeve to the outer tubes.

3,753,288
METHOD OF PROVIDING METAL SLABS FROM A METAL PRODUCTION FACILITY

Jacob J. Orbon, Sr., Towson, Md., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 28, 1971, Ser. No. 213,058
Int. Cl. B23k *19/00*; B23p *17/00*
U.S. Cl. 29—527.7 6 Claims

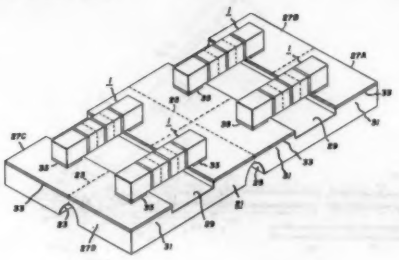


Expeditious delivery of plates and slabs from a metal slab producing facility is obtained by teeming a series of ingots to substantially the same height from a molten steel supply, determining a number of already ordered tailored slabs which can be made from each respective ingot leaving over an amount of metal within a predetermined range sufficient to form a single usable stock slab from each ingot for inventory, rolling said tailored slabs into plates for immediate delivery and placing said stock slab in inventory either as a stock slab or stock plate for subsequent delivery on an order for such stock slab or plate.

3,753,289
PROCESS FOR MANUFACTURE OF SUBSTRATE SUPPORTED SEMICONDUCTIVE STACK

Warren E. Berner, Camillus, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 863,209, Oct. 2, 1969. This application Nov. 2, 1970, Ser. No. 85,961
Int. Cl. B01j *17/00*
U.S. Cl. 29—580 4 Claims

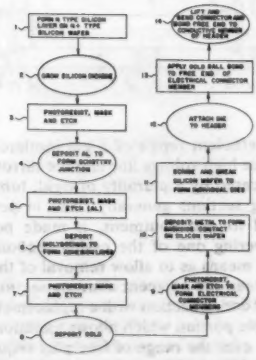


A plurality of junction containing semiconductive elements are bonded in series relation with semiconductive attachment elements of low resistivity bonded to opposite ends of the stack to form a semiconductive sub-assembly. The sub-assembly is bonded to metallized spaced lands with the junction containing elements spaced from the intervening surface of the substrate. Electrical conductors are bonded to the metallized lands in spaced relation to the semiconductive sub-assembly. The sub-assembly is etched in position on the lands and thereafter encapsulated with a passivant without intermediate handling. A plastic casement is molded around the sub-assembly and passivant. A plurality of substrates are initially integrally associated.

3,753,290
ELECTRICAL CONNECTION MEMBERS FOR ELECTRONIC DEVICES AND METHOD OF MAKING SAME

Raymond A. Zandonatti, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sept. 30, 1971, Ser. No. 185,260
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 5 Claims



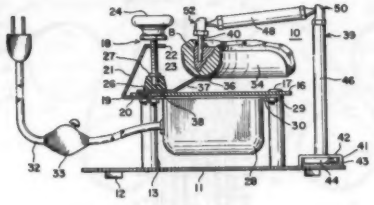
Electrical connection means are formed on surface means of an electronic device. One end of the electrical connection means is connected to electrical contact means provided by the electronic device. The free end of the electrical connection means is engaged and lifted from the surface means thereby lifting at least a section of the electrical connection means free of the surface means and the free end is electrically connected to another electrical contact means.

3,753,291

DENTAL RESTORATION DOWEL POSITIONER

Harvey Bocian, Jericho; Neil L. Hauptman, Jamaica, both of N.Y., and George Manik, Morganville, N.J., assignors to So-Mar Dental Studios, Inc., Jamaica, N.Y.

Filed Nov. 30, 1971, Ser. No. 203,198
Int. Cl. A61c 13/00
U.S. Cl. 32—11 10 Claims



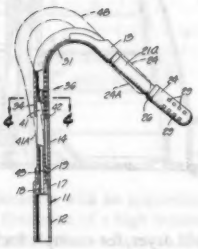
A dental restoration dowel positioner includes a base plate of magnetic material and a flat table resiliently mounted above the base plate and carrying an electrical vibrator. A pair of clamps are mounted on the table and releaseably clamp arms extending from pans holding dental impressions. A number of universally adjustable brackets are provided and each includes a permanent magnet coupling base magnetically retained on the base plate and movable along its face, a post projecting from the coupling base above the table and supporting an arm by a ball and socket joint. The arm terminates in a second ball and socket joint which supports an element for releaseably engaging a dowel for universal adjustment relative to the dental impression.

3,753,292

ADJUSTABLE SALIVA EJECTOR

Clifford L. Hutson, Glendale, Calif., assignor to Clifford L. Hutson and Anita M. Hutson, Glendale, Calif.

Continuation of Ser. No. 850,794, Aug. 18, 1969, abandoned.
This application Apr. 22, 1971, Ser. No. 136,607
Int. Cl. A61c 11/00
U.S. Cl. 32—33 8 Claims



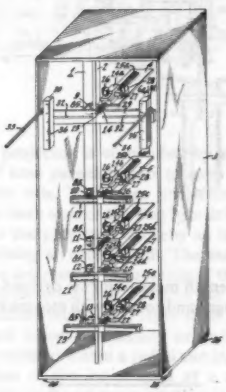
A support frame has an elongate open guide channel with a connection base at one end and a restraint loop at the other. The restraint loop has a through passage connecting with the channel. One end of a flexible conduit with a saliva ejector tip passes through the restraint loop into the channel to slidably engage a conduit connector at the connection base. Preferably, the connector has an elongate conduit receiver on which the conduit is slidable. The receiver flexes to facilitate removal of the conduit from the channel to adjust the overlap of the conduit and the connector to change the extension of the ejector tip with respect to the restraint loop. The conduit connector and ejector tip configuration and material may vary.

3,753,293

APPARATUS FOR USE IN THE MAKING OR ALTERATION OF GARMENTS

Daniel Hamilton Branda, Brooklyn, N.Y., and Richard Daniel Branda, Allentown, Pa., assignors to Automeasure, Inc., Brooklyn, N.Y.

Continuation of Ser. No. 822,129, May 6, 1969, abandoned.
This application Apr. 15, 1971, Ser. No. 134,513
Int. Cl. A41h 1/04
U.S. Cl. 33—8 4 Claims



An apparatus for automatically measuring dimensions defning the posture of a person upon whom clothing is to be fitted. The apparatus includes a vertical post fitted with a number of shelves which are vertically moveable on the post by means of motors. Each shelf is provided with a slide which is mounted for horizontal in-and-out movement on the shelf. The slide is driven by means of a motor and gear assembly mounted on the shelf. The outward end of the slide contains a sensitive switch which is coupled to the slide drive motor. Upon actuating the apparatus, the slide drive motor causes the corresponding slide to move outward until the sensitive switch is actuated by contact between the end of the slide and the person being fitted. As soon as the switch is so actuated, it shuts off the slide drive motor to halt the outward movement of the slide. A variable resistance mounted on the shelf and coupled to the slide provides a signal indicative of the horizontal position of the slide. A meter is provided to convert the signal developed from the variable resistance to a visual display.

3,753,294

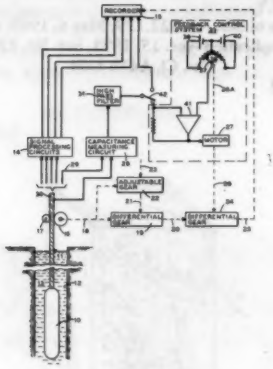
METHOD AND APPARATUS FOR MEASURING DEPTH

Georges Attali; John Aitken, both of Paris, France, and Jean-Louis Bernard, Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Feb. 24, 1971, Ser. No. 118,263
Claims priority, application France, Feb. 27, 1970, 7007104
Int. Cl. G01b 7/04, 7/26, 5/18
U.S. Cl. 33—133 12 Claims

In accordance with illustrative embodiments of the present invention, the distributed capacitance between a conductor and the outer metallic armor of a cable is measured to enable a determination of the instantaneous changes in position of a

tool supported by an elastic cable in a borehole. The correction calculated from the capacitance measurement is used



to correct cable length measurements derived from a measure wheel which engages and rotates with movement of the cable.

3,753,295

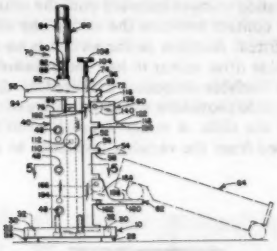
HEIGHT GAUGE AND AUXILIARY ATTACHMENTS THEREFOR

Harold M. Hecklinger, 8001 N. Ozanam, Niles, Ill.

Filed July 22, 1971, Ser. No. 165,138

Int. Cl. G01b *5/02*

U.S. Cl. 33—170 **2 Claims**



A multi-purpose gauging instrument embodying a pedestal which embraces a freely and vertically slidable carrier having integral vertically spaced projections defining gauging surfaces. A micrometer head has its sleeve fixedly secured to the upper end of the carrier and is movable bodily therewith, while the lower end of the micrometer spindle is engageable with the upper end face of the carrier so that when it rests thereon the micrometer head yields an accurate reading of the elevation of the carrier, and consequently of the gauging surfaces. A layout tool and a sine bar rest constitute auxiliary adjuncts which may be attached to the carrier to extend the usefulness of the instrument.

3,753,296

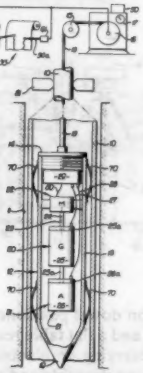
WELL MAPPING APPARATUS AND METHOD

Donald H. Van Steenwyk, San Marino, Calif., assignor to Applied Technologies Associates, Alhambra, Calif.

Filed Dec. 4, 1970, Ser. No. 95,302

Int. Cl. G01c *9/00*

U.S. Cl. 33—304 **28 Claims**



Bore hole and well mapping apparatus and method employs a rate gyroscope to travel in the hole or well, and to be rotated for azimuth determination, an accelerometer also being usable in conjunction with the gyroscope for tilt determination.

3,753,297

HOUSEHOLD DRYING MACHINE

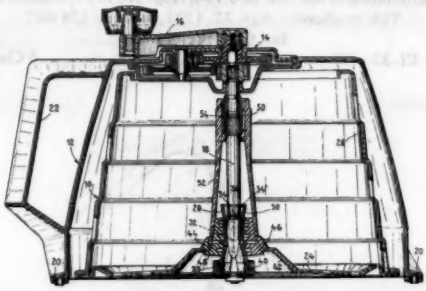
Jean Mantelet, Paris, France, assignor to Moulinex S.A., Bagnolet, France

Filed Dec. 23, 1971, Ser. No. 211,192

Claims priority, application France, Jan. 25, 1971, 7102298

Int. Cl. F26b *17/24*

U.S. Cl. 34—58 **3 Claims**



A household dryer, for example for drying salads, includes a basket mounted for rotation in a cover and a step-up gear drive connected to a handle for rotating the basket inside the cover. The basket is inside the cover and includes a sliding coupling part for connection to the gear drive.

3,753,298

WEB DRYER

Donald A. Ely, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.

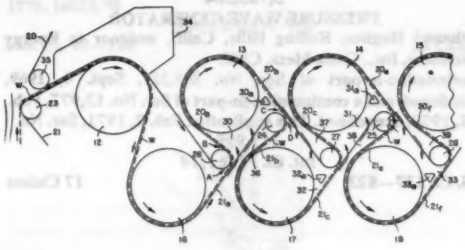
Filed Dec. 17, 1971, Ser. No. 209,204

Int. Cl. F26b *13/06, 13/16*

U.S. Cl. 34—116 **11 Claims**

A web dryer structure for thermal removal of moisture from a traveling web such as a web of paper coming from the press

section of a paper making machine including a row of upper dryer drums and a row of lower dryer drums with the drums positioned to carry the web in a sinuous path successively between the upper and lower drums and the web wrapping the upper and lower surfaces of the drums respectively with upper and lower looped felts wrapping the web on the upper and



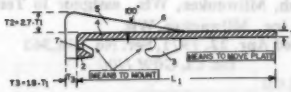
lower surfaces of the drums with the felt guided by guide rolls which are shifted laterally of the spaces between the drums a distance in the direction of web movement so that the pockets formed between the felts and the drums are pressurized due to the induced flow of air by the traveling felts and the guide rolls pumping air through the felts.

3,753,299

GRATE PLATE FOR GRATES FOR COOLING OR COMBUSTION

Paul Schreiner, Papenwisch, Germany, assignor to Claudius Peters, Aktiengesellschaft, Hamburg, Germany

Filed Mar. 26, 1971, Ser. No. 128,371
Claims priority, application Germany, Mar. 28, 1970, P 70 11 510.5; Apr. 30, 1970, P 70 16 267.3
Int. Cl. F27b *7/38*
U.S. Cl. 34—237 **10 Claims**



A grate plate in combination with an apparatus for cooling or combustion having a first zone of a high intense heat and a second area of a lesser heat such as a furnace, rotary furnace or a cooling facility of substantial dimensions for industrial purposes operating with temperature conditions varying from intense heat to moderate temperatures;

said apparatus having means for a directional flow of the material to be moved over said plate, air supply means for combustion or cooling of said material on top of said plate,

comprising: a planar body made of heat resisting, heat dissipating rigid metal, means to mount said plate into said apparatus;

a plurality of ribs in relation to the direction of flow of said material on a first area of the upper side of said plate exposed to said high intense heat and perpendicularly to said plate;

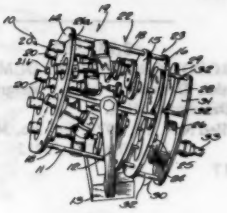
said ribs having upper wear surfaces inclined in a direction opposite to the forward direction of travel of said material and orifices in the said first zone of said plate for air supply.

3,753,300

ORRERY PROJECTION AND DRIVE

Kenneth C. Mosley, 6056 Del Cano S.E., Grand Rapids, Mich.

Filed July 17, 1972, Ser. No. 272,393
Int. Cl. G09b *27/02*
U.S. Cl. 35—42.5 **34 Claims**



Each image projector is suspended by and within a ring about a pair of axes perpendicular to each other and to the image projection axis. The image projector is driven simultaneously about both axes of the ring by a drive mechanism interconnected to the projector whereby an image is projected on a screen defining an orbital path. The magnitude and type of orbital path is selected by the spacing of the axes from each other and the drive mechanism. Where the orbit is elliptical, the drive mechanism includes an input shaft and wheel and an output shaft and wheel. An axially extending pin from the input wheel is confined within a radial slot in the output wheel whereby rotation of the input shaft at a constant velocity drives the output shaft and connected projector at a variable cyclical velocity corresponding generally to Kepler's Second Law.

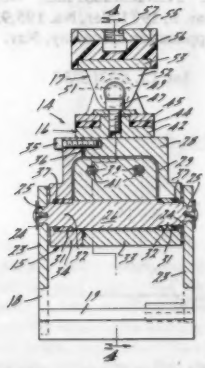
In another aspect of the invention, the plane of the drive mechanisms are rotatable in cooperation with each other to provide binary star projection and variable aspect orrery projection.

3,753,301

CRASH DUMMY VISCOUS NECK

Roger P. Daniel, Dearborn, and Robert E. Resh, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 23, 1972, Ser. No. 265,872
Int. Cl. G09b *23/32*
U.S. Cl. 35—17 **8 Claims**



A simulated neck construction and arrangement is provided for coupling a head structure to a torso structure of an anthropomorphic dummy of the type used in vehicular crash testing. The simulated neck construction and arrangement

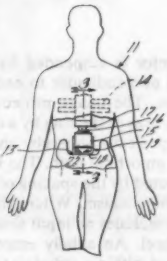
comprises a plurality of interconnected swivel units interposed between the head and torso structure. The swivel units permit fore and aft tilting movement, rotary movement about an axis lying in a vertical plane of the torso structure and substantially lateral tilting movement. A viscous damping means is housed within the swivel unit permitting fore and aft tilting movement to control the rate of deceleration of the head structure during such movements.

3,753,302

ANTHROPOMORPHIC TEST DUMMY TORSO

Roger P. Daniel, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 10, 1972, Ser. No. 305,621
Int. Cl. G09b 23/32
U.S. Cl. 35—17 5 Claims



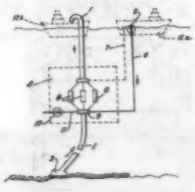
An anthropomorphic test dummy torso is provided with a spine mechanism extending from the pelvis upwardly to the chest. The spine mechanism comprises a plurality of vertically stacked pivot means mounted on a support platform located at the pelvis. The pivot means provide a pivot axis located at the waist line about which the torso is bendable in fore and aft directions, a vertical spinal axis about which the torso is twistable above its waist line, and an axis normal to the vertical spinal axis about which the torso is bendable sideways. An elastomeric isolation means above the stacked pivot means provides pelvis-to-chest shock and vibration isolation.

3,753,303

APPARATUS FOR HYDRAULICALLY RAISING ORE AND OTHER MATERIALS

Kurt Holzenberger, Frankenthal, and Otto Schiele, Neustadt, both of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal/Pfalz, Germany

Filed Nov. 5, 1971, Ser. No. 195,920
Claims priority, application Germany, Nov. 10, 1970, P 20 55 132.0
Int. Cl. E02f 3/88
U.S. Cl. 37—58 6 Claims



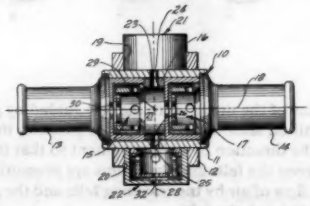
A plurality of containers in a riser conduit cooperates cyclically with a main suction pump and a flushing pump. Control valves are cyclically operated so that the main suction pump exhausts clear flushing water from one container, whereby a pressure differential is produced for raising an ore-water mixture in the lower portion of the riser conduit to the level of the container, while the ore-water mixture in another container is flushed through the upper riser conduit portion to the surface level. Between two and four containers can be used for the cyclical operation so that the ore-water mixture flows continuously out of the upper riser conduit portion, while any contact between the material and the main suction pump and the flushing pump is avoided.

3,753,304

PRESSURE WAVE GENERATOR

Nathaniel Hughes, Rolling Hills, Calif., assignor to Energy Sciences, Inc., Costa Mesa, Calif.

Continuation-in-part of Ser. No. 855,321, Sept. 4, 1969, abandoned, and a continuation-in-part of Ser. No. 13,977, Feb. 25, 1970, abandoned. This application Feb. 2, 1971, Ser. No. 111,995
Int. Cl. F15c 1/14
U.S. Cl. 137—823 17 Claims



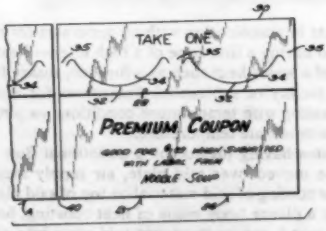
First and second shock wave generating cells are separated by a first resonant cavity. Third and fourth shock wave generating cells are arranged transverse to the first and second cells at opposite sides of and in communication with the first cavity. The shock waves from the cells collide in the first cavity. A second resonant cavity, which is terminated by a reflective strip of material, communicates with the outlet of the second cell. A plurality of cubicle auxiliary resonant cavities are formed around the side of the second cavity to intersect the plane in which the strip lies. A fifth shock wave generating cell is arranged transverse to the second cell in communication with the second cavity. Preferably, the shock waves generated by all the cells and the dimensions of the cavities are multiply related.

3,753,305

ADVERTISING SHEET CARRIER

Alfred E. Mueh, Milwaukee, Wis., assignor to Tempo Communications, Inc., Milwaukee, Wis.

Filed Apr. 22, 1971, Ser. No. 136,361
Int. Cl. G09f 1/00
U.S. Cl. 40—125 R 9 Claims

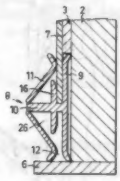


A resilient card has upper and lower margins spaced to fit snugly into the upper and lower flanges of a price tag channel in a merchandising center. It serves to support a pack of detachable advertising sheets. Its mid portion is anchored to the channel by a strip of pressure sensitive adhesive which prevents the card from flexing sufficiently to permit its anchored margins to escape from the flanges.

3,753,306
LETTER CARDS AND CLAMP BARS FOR CONSTRUCTING SIGNS, AND METHOD OF ASSEMBLING SAME

Sven Anders Hemgren, Sodra Skeppargatan 6b, 802 23 Gavle, Sweden

Filed July 27, 1971, Ser. No. 166,424
Claims priority, application Sweden, Aug. 10, 1970, 10924/70; Nov. 26, 1970, 16031/70; Nov. 26, 1970, 16032/70; Nov. 26, 1970, 16033/70
Int. Cl. G09f 7/08
U.S. Cl. 40—128 15 Claims

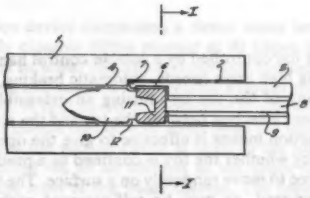


A building set for the assembly of text signs comprising one or several text lines comprises letter cards of a sufficient number and marking to form any desired text and a number of clamping rods for framing text lines along all four sides of the signs and between consecutive lines of the same. The clamping rods are formed as profiled rods symmetrical with respect to a medial longitudinal plane and provide one clamping gap on each side of the symmetry plane, the clamping gaps opening in opposite directions so that two successive text lines may be joined by means of one such clamping rod. Locking means are provided to connect the frame members formed by the clamping rods to hold the sign assembled, and suspension and mounting means are provided to support both separate signs and a number of signs placed one above the other or back to back. The method involves the assembling of the text signs by the use of an assembling board.

3,753,307
CARTRIDGE EXTRACTING ARRANGEMENT FOR USE WITH FIREARMS

Hubert Usel, 6401 Inzing, Tirol, Austria

Filed Oct. 26, 1971, Ser. No. 192,548
Claims priority, application Austria, Oct. 28, 1970, A9677/70
Int. Cl. F41c 15/00
U.S. Cl. 42—25 6 Claims

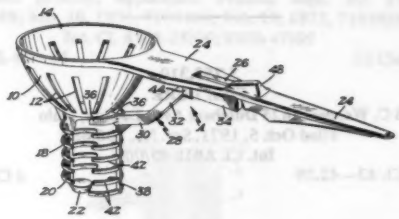


A firearm includes a tubular barrel having at its rear end a substantially cylindrical breech portion. A projectile is arranged within said barrel reaching with its rear end into said breech portion and having a peripheral surface. First engaging means is arranged on the peripheral surface of the projectile. A breech plunger is located behind said projectile in the breech portion of the barrel. Second engaging means is provided on said breech plunger and projects forwardly thereof. The second engaging means is adapted to engage with the first engaging means on the peripheral surface of the projectile. In this way, when the engaging means are engaged the projectile can be extracted in rearward direction from the barrel by rearward movement of the breech plunger.

3,753,308
MINNOW DIPPER AND HOLDER

Harold E. Swanson, Rt. 1, Box 62, Waverly, Minn.

Filed Dec. 2, 1971, Ser. No. 204,164
Int. Cl. A01k 97/04
U.S. Cl. 43—4 1 Claim

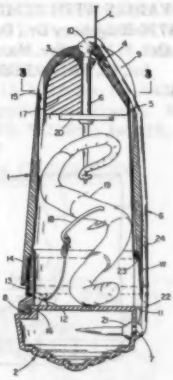


A minnow dipper and holder including a cup-shaped body having an opening at the lower diminished end and a handle connected thereto. A first support depends from the cup-shaped body adjacent the opening with a multiplicity of longitudinally spaced and generally semi-circular segments extending therefrom and a second support is connected to an arm slidable on the handle. The second support also has a multiplicity of longitudinally spaced and generally semi-circular segments extending therefrom with an arm connected to said second support and slidably connected to and actuable on the handle. The second support is spaced from the first support along its entire length.

3,753,309
FISHING BOBBER

Charles Harry Bryant, 30 Gaffield Avenue, Monument Beach, Mass.

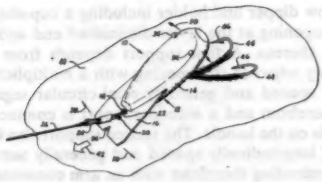
Filed Feb. 18, 1971, Ser. No. 116,528
Int. Cl. A01k 93/00, 97/04
U.S. Cl. 43—17.5 9 Claims



A fishing bobber with an enclosed bait compartment having an upper float portion and a lower bait compartment portion with an open bottom end. The lower bait compartment portion has an external line winding surface for temporarily retaining a wound line thereon by leading a fishing line to it for winding a desired length and from it for retaining the terminal bait carrying portion of the line within the bait compartment. A captured flotatable preferably luminous bait compartment cover is adapted to be releasably retained against the lower edge of the bait compartment portion and releasable cover retaining means are provided including an elastic strand of substantial length extending from the cover to the container

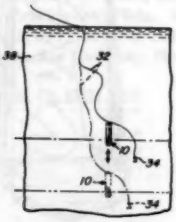
and overlapping cooperating release means on the cover and the container. The elastic strand is tensioned with the release means engaged to retain the cover against the lower edge and is released by water contact for removal of the cover to a floating position adjacent the container but connected to it by the strand for visual identification of its release.

3,753,310
FISH LURE
David C. Werner, 1625 Dutchess Ave., Dayton, Ohio
Filed Oct. 5, 1971, Ser. No. 186,680
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.39 4 Claims



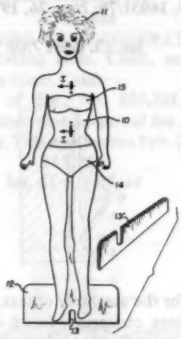
A bottom running fish lure with a restricted swing multiple hook constructed such that the hook barbs invariably point upwardly when the lure is in water, whereupon the lure may run over rocks without snagging. The lure includes a wiggle plate causing it to wobble from side to side and remain low in the water as it is retrieved.

3,753,311
DEVICE HAVING A FLUID DISPLACEMENT VOLUME WHICH VARIES WITH TEMPERATURE
George R. Boone, 4730 Ridgebury Dr., Dayton, Ohio
Filed Oct. 7, 1971, Ser. No. 187,389
Int. Cl. A01k *93/00*
U.S. Cl. 43—43.14 8 Claims



A device which seeks to maintain itself in a predetermined temperature region in a body of fluid having various temperature regions as the fluid displacement volume of the device is automatically varied with temperature. The device is particularly adapted for fishing, as a bait or lure or the like is maintained within or vertically oscillates through a predetermined temperaature layer or stratum in a large body of water, such as a lake or ocean or the like. However, the device may have numerous other uses in which it is desired to maintain an instrument or the like in liquid of a given temperature in a body of liquid having regions of various temperatures.

3,753,312
DOLL AND DOLL CLOTHING ENSEMBLE
Alexander W. Hughes, Jr., 19 Wardell Clr., Oceanport, N.J.
Filed Mar. 22, 1972, Ser. No. 236,941
Int. Cl. A63h *9/00*
U.S. Cl. 46—157 3 Claims



A doll having a three-dimensional head and a two-dimensional body, said doll being in combination with a cloth-vinyl laminated article of doll clothing physically bondable to the doll body.

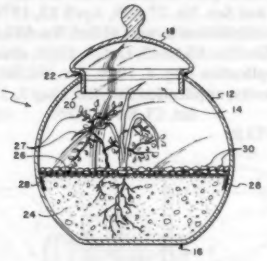
3,753,313
REMOTE CONTROLLED ACTION TOY
Helmut Bross, Altenberg U/Nurnberg, Germany, assignor to Helmut Bross, Nurnberg, Germany
Filed Apr. 1, 1970, Ser. No. 24,772
Claims priority, application Germany, July 12, 1969, P 19 35 461.1; Apr. 8, 1969, P 19 17 755.0; Apr. 8, 1969, G 69 19 975.9; July 12, 1969, G 69 27 595.2
Int. Cl. A63h *17/26*
U.S. Cl. 46—202 6 Claims

An action toy controlled by a remote control handle device for providing high drive speeds, automatic braking, and automatic steering of the toy by utilizing an extensible resilient traction means attached between the toy and the control handle. The traction means is effective to give the operator control of the toy whether the toy is confined to a predetermined track or is free to move randomly on a surface. The toy may be totally unpowered, or may be self-powered with a driving means and/or power supply means provided in either the control handle or within the action toy itself.

3,753,314
SCREEN FOR A TERRARIUM
Earl R. Clark, P. O. Box 914, Graham, Tex.
Filed Feb. 28, 1972, Ser. No. 229,688
Int. Cl. A01g *9/02*
U.S. Cl. 47—34.11 5 Claims

A terrarium or the like for use in cultivating and exhibiting plants having a transparent container with a transparent closure member sealing said container, an aluminum mesh screen dividing the interior of said container into a first and second area, the first area being located below the screen when the

container is in its orientation of use, the first area containing moist soil, the side of said screen adjacent said second area

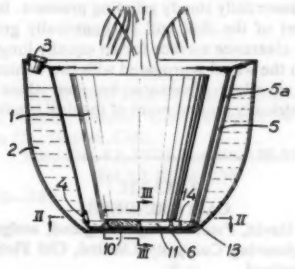


having decorative cover attached thereto and plants with roots extending into said soil through said ground cover and the screen.

3,753,315
DEVICE FOR IRRIGATION ESPECIALLY OF FLOWER POTS

Roger Francois Jean Adam, 40, rue du Mont Valerien, Saint Cloud, France

Filed May 27, 1971, Ser. No. 147,383
Claims priority, application France, May 28, 1970, 7019572
Int. Cl. A01g 27/00
U.S. Cl. 47—38 10 Claims

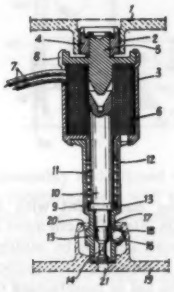


An irrigation device comprising a closed water tank having a hermetically closable filling stopper at its upper end and a water outlet at its lower end and a receptacle formed with two cavities therein and adapted for receiving a flower pot which is to be irrigated. A first cavity is connected to the water outlet of the tank to permit free flow of water from the tank into the first cavity and the second cavity is open to the atmosphere and is connected via an air conduit to the upper end of the tank above the level of the water therein. The second cavity can receive water by overflow from the first cavity to establish a height of water in the cavities to the level of the water inlet. The outlet of the air conduit is below the water outlet so that water flows from the water outlet only when the level of water has dropped below the outlet of the air conduit. A sponge or similar absorption medium is disposed in one of the cavities for supplying water to the flower pot. When the sponge is in the first cavity water will be supplied cyclically and the first cavity will be periodically filled an emptied by the pot. When the sponge is in the second cavity water will be supplied continuously to the pot. In a modification the pot is replaced by a bed of soil and the second cavity is isolated therefrom while the first cavity is connected to the bed of soil through the intermediary of a porous wall. The sponge is placed in the first cavity.

3,753,316
DOOR LOCK WITH AUTOMATIC AND EMERGENCY CONTROL SYSTEM

Henri Savarieau, Montgeron (Essonne), and Georges Bourrie, Neuilly-sur-Seine, both of France, assignors to R. Alkan Cie, Paris, France

Filed Aug. 25, 1971, Ser. No. 174,863
Claims priority, application France, Sept. 10, 1970, 7032848; Feb. 10, 1971, 7104460; Feb. 10, 1971, 7104459
Int. Cl. A62b 25/00; E05b 47/00
U.S. Cl. 49—31 16 Claims

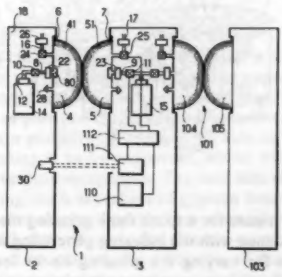


The door locking device according to this invention is characterized in that it comprises a guiding sleeve disposed within the locker or like box and having slidably mounted therein a piston responsive to an electromagnet or a fluid pressure so as to actuate with its lateral surface at least one lateral locking member movable in said locker and adapted to co-act with a retaining member rigid with the door so as to lock or release this door according as said piston is in its front or back position in said sleeve.

3,753,317
INFLATABLE POCKET ARRANGEMENT FOR SELECTIVELY CLOSING A PASSAGEWAY

Pierre Turpin, Bures sur Yvette, and Albert Nael, Saint Michel sur Orge, both of France, assignors to Compagnie Generale D'Automatisme, Paris, France

Filed May 13, 1971, Ser. No. 143,120
Claims priority, application France, May 13, 1970, 7017432; June 11, 1970, 7021455; July 10, 1970, 7025847; Oct. 19, 1970, 7037567
Int. Cl. E05b 65/00
U.S. Cl. 49—35 10 Claims

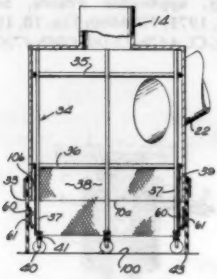


Device for closing automatically controlled pedestrian passages, comprising two pockets having elastic lateral walls arranged facing each other on the lateral edges of the passage, each pocket being provided with inflating means.

3,753,318
DUSTLESS SAND BLASTER

Luther Eskijian, Altadena, Calif.

Filed Oct. 25, 1972, Ser. No. 300,462
Int. Cl. B24c 3/06, 5/00, 9/00
U.S. Cl. 51—11 10 Claims

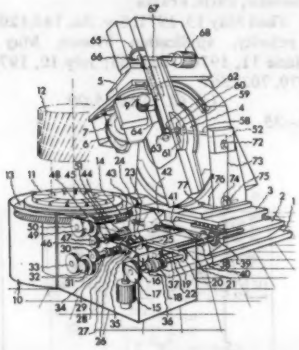


Sand or grit blasting equipment with a work-engaging chamber having a nozzle inlet. The chamber is positioned and moved parallel to a work surface by multiple spring-biased caster supports and is connected to a suction device, which may include a venturi to aid in maintaining reduced chamber pressure. A flexible, slit skirt extends about the work-engaging open end of the chamber to prevent escape of grit particles while allowing air streams to pass into the chamber. An open-work frame within the skirt limits inward deflection of the skirt.

3,753,319
CONTROL OF TOOTH FLANK GRINDING MACHINES FOR HELICAL GEARS

Milton Mesey, Wallisellen, Switzerland, assignor to Maag Gear Wheel & Machine Company Limited, Zurich, Switzerland

Filed Oct. 8, 1971, Ser. No. 187,792
Claims priority, application Germany, Oct. 16, 1970, P 20 50 946.0
Int. Cl. B24b 3/00
U.S. Cl. 51—42 13 Claims

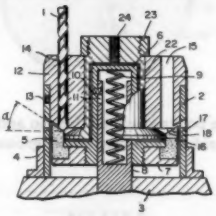


A control means for a tooth flank grinding machine operating in accordance with the indexing generating method has an arrangement for varying the grinding stroke length during a traverse so that it increases from a minimum at the beginning of a traverse and reduces again towards the end of the traverse, so reducing the over-run of the grinding wheels in the end regions of the traverse. The velocity of the generating motion is controlled concurrently in reverse proportion to the grinding stroke length.

3,753,320
APPARATUS FOR GRINDING DRILLS

Raimund August Wurscher, Lund, Sweden, assignor to Intermedium AG, Luegisland, Sweden

Continuation-in-part of Ser. Nos. 682,406, Nov. 13, 1967, abandoned, and Ser. No. 27,589, April 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 682,406, Nov. 13, 1967, and Ser. No. 864,445, Oct. 7, 1969, abandoned. This application Aug. 4, 1970, Ser. No. 60,888
Claims priority, application Sweden, May 3, 1967, 6261/67
Int. Cl. B24b 3/26
U.S. Cl. 51—73 R 32 Claims

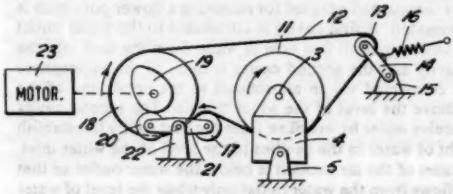


Apparatus is described whereby the clearance surfaces of the working head of a drill are ground by keeping the drill axis at an operatively constant angle relative to the rotary place of a grinding wheel, while rotating the drill about its longitudinal axis within a limited angular area. In one embodiment of the invention the wheel heel is provided with a single grinding surface and may be mounted stationary or mounted to yield against spring pressure to a single clearance surface urged against it, until the other clearance surface is intercepted by an abutment upon which it rests while rotating the drill, thus providing an essentially steady grinding pressure. In the latter case, the point of the drill will be centrically ground after working each clearance surface for an equally long time. In a modified form the wheel is provided with two conical grinding surfaces and a slight clearance between these surfaces. Thereby a centrically ground point of the drill is automatically achieved.

3,753,321
CAM GRINDERS

Curt Ludwig David, Peterborough, England, assignor to The Newall Engineering Company Limited, Old Fletton, Peterborough, England

Filed July 19, 1971, Ser. No. 163,601
Int. Cl. B24b 17/02
U.S. Cl. 51—101 R 3 Claims



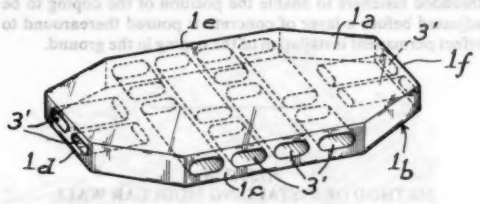
A cam grinder in which the angular velocity of the workpiece is cyclically varied to reduce variations in the contour velocity. A work table is controlled by a master cam to move relative to a grinding wheel in accord with the desired profile. The workpiece is driven by a spindle carrying a wheel driven by a belt which passes over a driving wheel. Additional longitudinal movement of the belt is introduced by a wheel mounted on a pivoted arm controlled by a control cam that is rotated in accord with the movements of the work table.

3,753,322

METHODS FOR THE MANUFACTURE OF LIGHTWEIGHT OPTICAL PARTS

Roger Rene Bordes, Puteaux, France, assignor to ETAT Francais Delegation Ministerielle pour L'Armement, Paris, France

Filed Jan. 27, 1971, Ser. No. 110,124
Claims priority, application France, Jan. 28, 1970, 7002892; Jan. 7, 1971, 7100278
Int. Cl. B24b 1/00, 9/14
U.S. Cl. 51—284 7 Claims



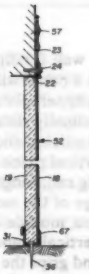
A process for the manufacture of lightweight optical parts, comprises forming at least one optical surface on a solid blank by machining and mechanical polishing ultrasonically machining cavities underlying the optical face in at least one of the remaining faces of the blank to reduce the weight of the article and finally depositing an optical coating on the optical surface. The weight reducing recesses can be made in the face of the blank opposite the optical surface or they can be formed in lateral surfaces of the blank. An ultrasonic generator is disclosed with an electrode serving as a machining tool.

3,753,323

SKIRTING FOR MOBILE HOMES

George G. Nesbitt, Denver, Colo., assignor to Denver Wood Products Co., Denver, Colo.

Filed Oct. 12, 1971, Ser. No. 188,061
Int. Cl. E04d 2/38
U.S. Cl. 52—169 5 Claims



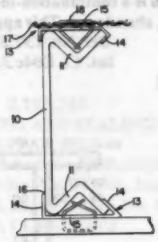
A skirting system and components for enclosing an air space beneath mobile homes, trailers and similar structures. The system utilizes metal panels with insulation bonded thereto in position to provide exposed lip edges for cooperative use when erecting the system. The edges are lapped with adjacent panels or components of the structure to provide weathertight joints and continuus insulation. Corner pieces and anchor channels and plates are provided for adjustable positioning between a lower skirt edge and the ground support for the structure.

3,753,324

METAL STUD ASSEMBLY

Joseph L. Puccio, 41286 Chapel Way, Fremont, Calif.

Filed Dec. 10, 1971, Ser. No. 206,705
Int. Cl. E04c 3/07
U.S. Cl. 52—377 5 Claims



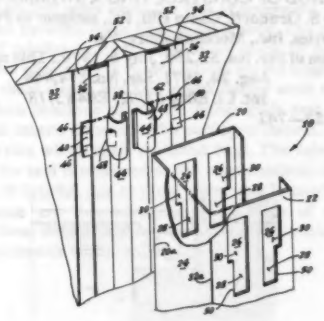
A metal stud assembly is disclosed which includes a load-bearing element consisting of a web and at least one flange with the flange bent from the same sheet of metal as the web and bent into a V-shaped cross section. A sheet-holding element is fixed to the flange, the sheet-holding element being penetrable by connectors for sheet material.

3,753,325

DEMOUNTABLE WALL STRUCTURE

John E. Stanley, 525 Starlight Crest Dr., La Canada, Calif., and Bernard Mann, 14519 Greenleaf St., Sherman Oaks, Calif.

Filed Feb. 7, 1972, Ser. No. 223,887
Int. Cl. E04b 2/74
U.S. Cl. 52—489 3 Claims

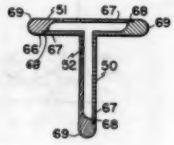


A series of channel-member or "H" studs is disposed vertically between the floor and ceiling or other upper support in a planar alignment and the studs are spaced from each other to support wall or partition facing. Each channel or "H" member is orificed at a plurality of areas on its side or sides against which the facing is to be supported, either with or without flanges to constitute receptacles. The back side of each wall or partition facing, such as a sheet of gypsum board, has affixed to it a series of spring-type projections spaced from each other to register with the orifices in the channel-member studs. The wall is formed by placing the backside of the facing sheet against the channel-member studs and pushing the spring-type projection into the receptacles. Preferably each receptacle includes locking tabs which require the projections, and hence the facing sheet upon the back of which they are mounted, to be moved slightly upwardly in order to effect disengagement of the projections from the receptacles.

3,753,326
HOLLOW STRUCTURAL MEMBERS

Ralph O. Kaufman, Sr., Titusville, Pa., assignor to Cyclops Corporation, Universal-Cyclops Specialty Steel Division, Pittsburgh, Pa.

Division of Ser. No. 864,927, Sept. 10, 1969, Pat. No. 3,606,580, which is a continuation-in-part of Ser. No. 823,924, May 12, 1969, abandoned. This application Apr. 26, 1971, Ser. No. 137,555
Int. Cl. E04c *3/07*
U.S. Cl. 52—731 3 Claims

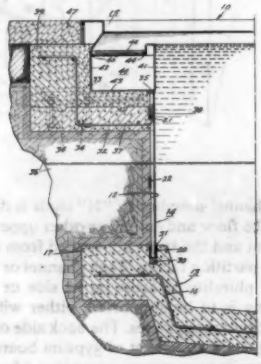


A hollow structural member comprising at least two connected wrought metal components, each component having a specially formed edge configuration and a plain formed remaining portion. The hollow structural member is formed by connecting the plain formed remaining portion of a first component with the specially formed edge configuration of a second component and connecting the plain formed portion of the second component with the specially formed edge configuration of the first component or a third component, etc., these connections being inward from the outer extremities of the special formed edge configurations and being along a recess in an enlarged mass portion of the special formed edge configuration.

3,753,327
METHOD OF CONSTRUCTING A SWIMMING POOL

Brickley S. Orndorff, Camp Hill, Pa., assignor to Penn-Aquatic Industries, Inc., Mechanicsburg, Pa.

Division of Ser. No. 52,250, July 6, 1970,. This application Aug. 24, 1971, Ser. No. 174,449
Int. Cl. E04g *21/02*; E04h *3/18*
U.S. Cl. 52—742 1 Claim

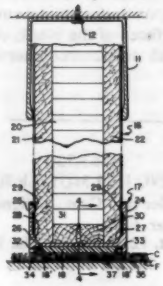


A method for constructing an in-ground swimming pool having a poured concrete bottom, an upstanding wall composed of a series of vertically corrugated metal panels bonded to the bottom, and a coping around the top of the wall. The wall is bonded to the bottom by means of an epoxy resin applied along the lower margin of the wall and in a continuous recess formed in the periphery of the bottom during pouring. A layer of deformable leveling material is applied in the recess in the bottom of the pool for supporting the wall. The leveling material permits the wall to be leveled before being permanently bonded to the bottom by the epoxy. The coping means may be provided with an upwardly open water channel at water level in which case, a layer of epoxy resin is disposed between the top of the wall and the underside of the coping. The channel coping is supported on a series of horizontally disposed members which are vertically adjustable by means of threaded fasteners to enable the position of the coping to be adjusted before a layer of concrete is poured therearound to effect permanent installation of the coping in the ground.

3,753,328
METHOD OF INSTALLING MODULAR WALL CONSTRUCTION

William G. Papsco, P.O. Box 666, San Carlos, Calif.

Continuation-in-part of Ser. No. 820,561, April 30, 1969, abandoned. This application June 8, 1971, Ser. No. 151,053
Int. Cl. E04b *2/82*
U.S. Cl. 52—745 1 Claim



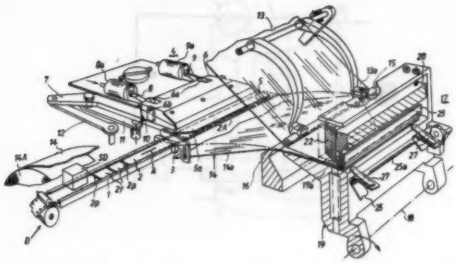
An interior modular wall for finished or existing rooms in which each module has a panel with an integral floor rail carrying a shorter floor gripper plate which projects from the floor rail and is longitudinally slidably interlocked therewith. The module is installed quickly and simply by manually lifting the module into the vertical plane of a prepositioned longitudinally extending ceiling rail, longitudinally spacing the vertically extending side edge of the module from the corresponding edge of the adjacent module or abutment, lowering the module while in that vertical plane onto the floor so that the gripper plate engages and grips the floor covering, and moving the panel and floor rail unit longitudinally relative to the ceiling rail,floor, and gripper plate into engagement with the adjacent preinstalled module. Both side edges of the panel are free to be gripped by the installer during the lifting and lowering operations, thereby greatly simplifying and reducing the time for erecting the wall.

3,753,329
Patent Not Issued For This Number

3,753,330
APPARATUS FOR PACKING STRIPS OF PHOTOGRAPHIC FILM

Friedrich Hujer, Grunwald, and Wilhelm Dietl, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 22, 1971, Ser. No. 182,631
Claims priority, application Germany, Sept. 23, 1970, P 20 46 874.0
Int. Cl. B65b *55/00*; B32b *31/00*
U.S. Cl. 53—123 17 Claims

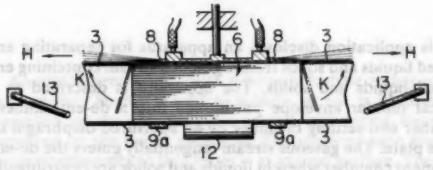


Apparatus for enclosing sections of photographic roll films in transparent envelopes has two rolls of convoluted webs of weldable synthetic plastic material from which the webs are being withdrawn in such a way that their leading portions form a funnel. A severing device subdivides successive films into sections of requisite length, and a transfer device collects and introduces such sections into the funnel between the webs and all the way to a welding station where the webs are intermittently welded to each other to form envelopes each of which contains a single section or a stack of two or more superimposed sections. The webs can be severed subsequent to formation of each envelope or subsequent to formation of two or more interconnected envelopes to thus separate from the webs a series of discrete envelopes or a series of composite envelopes. Such composite envelopes can be folded in leporello fashion.

3,753,331
METHOD OF AND MEANS FOR FACILITATING A SEALING OF END FLAPS OF A FILM

Yoshimasa Sato, Yokohama, Japan, assignor to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1971, Ser. No. 141,769
Claims priority, application Japan, May 14, 1970, 45/40522; May 14, 1970, 45/46474
Int. Cl. B65b *1/24*, *7/06*, *43/34*
U.S. Cl. 53—124 C 2 Claims

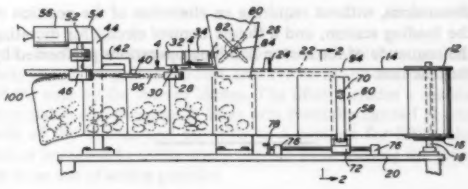


A method of tensioning end flaps of a film which has been already sealed along at least one of the top, bottom, front and back of an object to be packed. This method consists in establishing a stream of air flowing toward the end flap along at least the top of the object, and training the end flaps of the film along the air stream. Means to carry out this method comprises a plurality of air injection nozzles extending towards the end flaps of the film along at least the top of the object.

3,753,332
BAG FORMING, FILLING AND SEALING METHOD AND APPARATUS

Hercules Membrino, 1934 Arch St., Philadelphia, Pa.

Continuation-in-part of Ser. No. 44,186, June 8, 1970. This application Sept. 28, 1971, Ser. No. 184,345
Int. Cl. B65b *9/08*
U.S. Cl. 53—183 7 Claims



A method and apparatus for forming, filling and sealing thermoplastic bags, the bags being formed by intermittently passing a heated knife or the like transversely through the strip, as the strip moves through a linear path. The knife both partially severs and seals along the line of severance, the bags being defined between these lines of severance. The strip may be either of tubular or overfolded sheet stock. If tubular, a blade slits one edge open to form a mouth for the bags while, if overfolded sheet stock, the free edges define such a mouth. The bags then continue along the linear path past a filling device which inserts material to be packaged therein, and past a sealing device which seals the filled bags. The selvage portion above the seal is removed as the bags continue along the linear path. If desired, one or more transverse lines of seal but not severance are formed between the lines of seal and severance, these lines of seal but not severance forming one or more compartments within each bag.

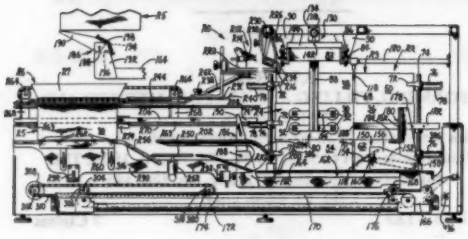
3,753,333
CARTON HANDLING MACHINE

Edward J. Derderian, 4514 W. Wilson Ave., Fresno, and John P. McGlashan, Reedley, both of Calif., assignors to said Derderian, by said McGlashan

Filed Apr. 23, 1971, Ser. No. 136,782
Int. Cl. B65b *3/02*, *43/28*, *43/39*
U.S. Cl. 53—186 4 Claims

A carton handling machine particularly suited for use in erecting cartons from collapsed, articulated blanks and presenting the erected carton to a loading station. The machine is characterized by a carton erecting station at which cartons are erected from collapsed, articulated blanks, a carton loading station having a fixed loading plane within which the opening of each erected carton is presented for carton packing purposes, and a carton advancing unit for simultane-

ously ejecting packed cartons from the carton loading station and advancing thereto cartons erected at the erecting station. The features of the invention include a readily dajustable support structure for accommodating cartons of various practical



dimensions, without requiring an alteration of the position of the loading station, and a fluidic control circuit for dictating the sequence of the carton handling operations performed by the machine.

3,753,334

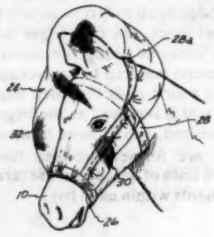
PROTECTIVE BONNET FOR ANIMALS

Jacqueline M. Blessing, 5074 Cohoctah Rd., Linden, Mich.

Filed Nov. 3, 1971, Ser. No. 195,110

Int. Cl. B68c *05/00*

U.S. Cl. 54—80 **18 Claims**



A protective bonnet for an animal's head, having a pair of adjustable, preferably elastic, straps formed to encircle the animal's head respectively forward and behind its eyes and connected by a pair of side bands, one on each side of the animal's face. A sheet of foraminous screen material is peripherally secured to the side bands and to the portions of the straps extending over the top of the animal's nose and brow, with the sheet of screen material being relatively large to bulge outwardly of the animal's face. A modification includes a third strap attached at side portions of the rearward strap and encircling the top of the animal's head behind its ears to prevent the bonnet from slipping forwardly on the animal's face. The strap over the animal's brow may optionally be pulled around to extend behind its ears so that the screen material will also cover the ears if desired, and in another modification additional screen-mesh pockets are optionally removably attached to the straps to cover and enclose the animal's head.

3,753,335

CONDENSATION OF HALOHYDROCARBONS

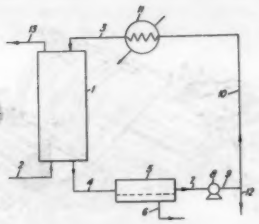
Victor William Morris, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 12, 1970, Ser. No. 88,649

Claims priority, application Great Britain, Dec. 5, 1969, 59,511/69

Int. Cl. B01d *53/16*

U.S. Cl. 55—29 **2 Claims**



A process for condensing halogenated hydrocarbon which comprises bringing a stream comprising halogenated hydrocarbon vapour, water vapour and non-condensable gases into direct contact with a liquid medium which is maintained at a subnormal temperature sufficient to condense both the halogenated hydrocarbon vapour and the water vapour and which retains condensed water in the liquid phase.

3,753,336

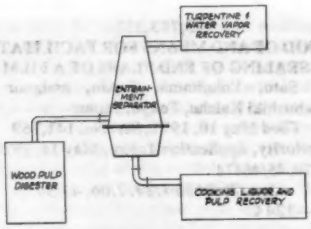
CENTRIFUGAL SEPARATION APPARATUS

John Drew, and Robert Elliott Marks, both of Jacksonville, Fla., assignors to Envirotech Corporation, Salt Lake City, Utah

Continuation of Ser. No. 76,645, Sept. 29, 1970, abandoned, which is a continuation of Ser. No. 781,055, Dec. 4, 1968, abandoned. This application Apr. 6, 1972, Ser. No. 241,628

Int. Cl. B01d *45/12*

U.S. Cl. 55—242 **9 Claims**



This application discloses an apparatus for separating entrained liquids and solids from a gaseous stream containing entrained liquids and solids. The apparatus is described as a conical tubular envelope partitioned into a de-entrainment chamber and settling chamber by an apertured diaphragm or baffle plate. The gaseous stream tangentially enters the de-entrainment chamber wherein liquids and solids are centrifugally seapatated. The de-entrained liquids and solids pass through the apertured diaphragm into the settling chamber, while gaseous components leave through an outlet in the de-entrainment chamber.

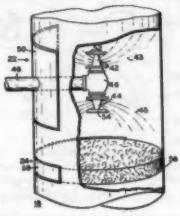
The apparatus is particularly effective in removing entrained cooking liquids and woodpulp from the wet gaseous effluent of a woodpulp digester.

3,753,337

GAS CLEANING SYSTEM

Harry D. Shaw, 445 W. Perry St., Tiffin, Ohio, and George E. Strausbaugh, 2444 County Rd. 80, Burgoon, Ohio

Filed June 18, 1971, Ser. No. 154,293
Int. Cl. B01d 47/06
U.S. Cl. 55—233 1 Claim



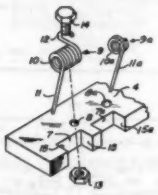
A system for cleaning gas and particularly for removing fine solid particles including a cyclone separator and a unit separator downstream thereof interconnected by a duct containing sources of oppositely directed liquid curtains or sprays through which the gas stream passes. A wire maze filter is positioned in the duct downstream of the curtains in a position to be washed by the second curtain. A second separator receives the issue from the duct and provides a broad area reentrant gas path to an exit and a surface upon which fluid and removed solids accumulates and flows under the influence of gravity to a sump and/or exit.

3,753,338

POWERED GRASS RAKING DEVICE

Jack Sherratt, Edmonton, Alberta, Canada, assignor to Arthur Mihalcheon, Edmonton, Alberta, Canada

Continuation-in-part of Ser. No. 786,486, Nov. 15, 1968, abandoned. This application Dec. 18, 1969, Ser. No. 886,341
Int. Cl. A01d 79/02
U.S. Cl. 56—17.5 1 Claim



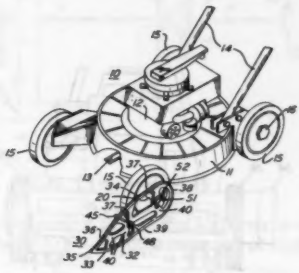
An attachment for use with a household-type rotary power lawn mower having a vertical spindle. A bar is horizontally mounted on the spindle. One or two coil spring tines are mounted on the bar at each end. The tooth of each tine extends downwardly so that its tip is at ground surface. The high speed rotation of the tines over the ground along with the movement of the machine along the ground results in the tines scrubbing dead grass out of a lawn without otherwise seriously damaging the live grass.

3,753,339

SHRUBBERY LIFTER FOR LAWN MOWERS

Robert G. Loughead, 547 Concord Rd., Warminster, Pa.

Filed Mar. 27, 1972, Ser. No. 238,441
Int. Cl. A01d 63/00
U.S. Cl. 56—119 6 Claims



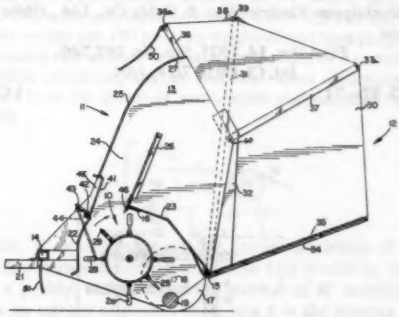
A shrubbery lifter for mowers is provided which is particularly suited for power mowers and avoids likelihood of injury of the user by the mower blades. The lifter includes a readily attachable and detachable lifter arm pivotally carried at one side of the mower and movable to a position for lifting the lower branches to avoid injury thereto while cutting the grass or to an out of action position.

3,753,340

MOWER WITH EASY DISCHARGE GRASS CATCHER

Bernard C. Mathews, P.O. Box 70, Crystal Lake, Ill.

Filed Jan. 10, 1972, Ser. No. 216,413
Int. Cl. A01d 35/22
U.S. Cl. 56—200 11 Claims



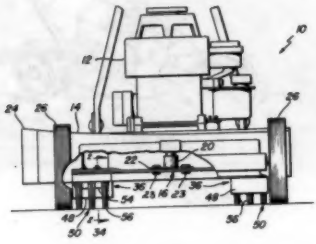
A flail type rotor assembly is journalled in side plates. A housing over the rotor was an outlet leading into a vertical chute formed by a front wall and a baffle. A grass catching receptacle is pivotally suspended from the upper part of the side walls. The upper part of the front wall is curved to deflect grass clippings rearwardly into the receptacle. By rocking the receptacle, the bottom edge moves away from the housing to empty itself. A gate for the outlet may be closed for alternative operation in which the clippings are returned to the ground. The front wall is cut away in front of the gate. Paddles on the drum help create the air stream which blows the clippings upwardly.

3,753,341

RAKE ATTACHMENT FOR ROTARY POWER MOWERS

Albert T. Berg, Jr., and Howard Langlie, both of Ellendale, Minn.

Filed Sept. 22, 1972, Ser. No. 291,214
Int. Cl. A01d 81/00
U.S. Cl. 56—400.04 13 Claims



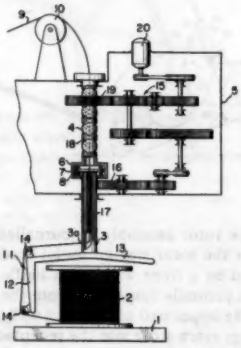
A pair of polyethylene rake units are detachably mounted on the end portions of an elongated member carried at the lower end of the drive shaft of a rotary power mower blade. The embodiments are described, the rake units being held in both instances by channel-shaped retention means. In one embodiment, the holding is achieved by means of a separate channel-shaped adapter which is bolted to the underside of the usual blade attached to the drive shaft, whereas in the other embodiment the blade is removed and a specially configured elongated member is substituted in order to provide the requisite rake unit retention. Use of the adapter lends itself readily to the provision of a vane which produces a continuous trailing region of reduced pressure, thereby enhancing the raking action.

3,753,342

APPARATUS FOR WINDING UP WIRE, STRAND, CABLE OR THE LIKE

Tatumi Yoshitake, and Masami Azetu, Ohita, Japan, assignors to Nishinippon Electric-Wire & Cable Co., Ltd., Ohita-ken, Japan

Filed Dec. 14, 1971, Ser. No. 207,740
Int. Cl. D01h 7/24, 1/04
U.S. Cl. 57—71 1 Claim



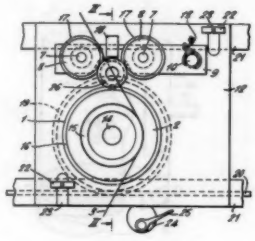
An apparatus for winding up a cable or the like includes a stationary spool, a cable guiding device positioned about said spool, and means for vertically reciprocating said guiding device while moving it about the axis of said spool.

3,753,343

APPARATUS FOR FALSE-TWISTING YARN

Geoffrey Naylor, and Harold Sydney Warne, Macclesfield, England, assignors to Ernest Scragg & Sons Limited, Macclesfield, Cheshire, England

Filed Jan. 19, 1972, Ser. No. 219,026
Int. Cl. D02g 1/04, 1/06
U.S. Cl. 57—77.45 17 Claims



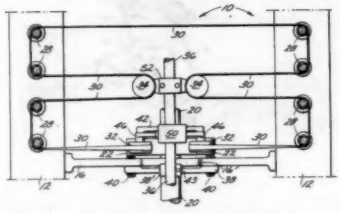
A bush twister for false-twisting yarn is of the known kind comprising a friction bush at each end of a bush tube of comparitively large diameter, the yarn being false-twisted by running it through the bore of the bush twister, which is not supported in anti-friction bearings but is supported and driven by engagement with the rim of a driving wheel, against which the bush twister is held by a pair of idler wheels on a pivotal spring-loaded arm.

3,753,344

SPINDLE-DRIVE ASSEMBLY FOR TEXTILE SPINNING MACHINES

James K. Merck, Piedmont, S.C., assignor to Maremont Corporation, Chicago, Ill.

Filed Feb. 7, 1972, Ser. No. 223,947
Int. Cl. D01h 1/24
U.S. Cl. 57—105 12 Claims



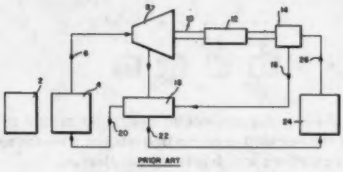
The drive tape is directed into desired engagement with the whirls of at least three spindles on each side of the spinning machine, and with a centrally located tape-driving drum rotatable in either direction, by pairs of idler and tension pulleys symmetrically mounted adjacent the driving drum and preferably adjacent the center of the machine for unitary vertical adjustment.

3,753,345

POWER FLUID

Frank H. Cassidy, Orangevale, and Ramon Garcia, Sacramento, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Nov. 1, 1971, Ser. No. 194,271
Int. Cl. F01k 25/00
U.S. Cl. 60—36 7 Claims



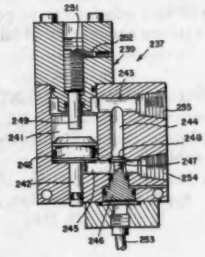
A working fluid for use in a Rankine cycle engine consists of a mixture of hexafluorobenzene and perfluorotoluene.

3,753,346

FLUID MONITORING UNIT

William M. B. Fitzgerald, Toronto, Ontario, Canada, assignor to Johnson, Mathey and Mallory, Ltd., Toronto, Canada

Division of Ser. No. 786,971, Dec. 26, 1968, Pat. No. 3,634,934, which is a continuation-in-part of Ser. No. 507,173, Nov. 10, 1965, abandoned. This application Nov. 24, 1970, Ser. No. 92,515
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 R 1 Claim



A volume of fluid emanating from a cavity is regulated through a parallel conduit, pressurized system.

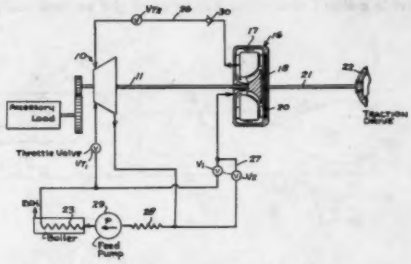
3,753,347

RANKINE CYCLE POWER PLANT WITH COMPRESSIBLE FLUID TORQUE CONVERTER

Charles C. Hill, La Jolla, Calif., assignor to Power Technology Corporation, Bloomfield, Mich.

Filed Dec. 29, 1971, Ser. No. 213,345
Int. Cl. F01k 27/00
U.S. Cl. 60—105 9 Claims

A Rankine cycle power plant which has its output shaft connected to the input rotor of a compressible fluid torque converter. Fluid lines connect the casing of the torque converter with the Rankine cycle power plant. By varying the density of



the fluid in the compressible fluid torque converter, a variable speed output can be achieved without the use of high speed gearing.

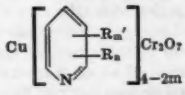
3,753,348

PROPELLANT BURNING RATE CATALYST AND METHOD OF PROPULSION

Charles H. Burnside, Waco, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 2, 1959, Ser. No. 850,491
Int. Cl. C06d 5/06
U.S. Cl. 60—219 18 Claims

1. An improved solid composite type propellant composition comprising: as a base propellant, a major amount of a solid inorganic oxidizing salt as an oxidizer component and a minor amount of a suitable binder component comprised of a material selected from the group consisting of natural rubber, synthetic rubber, copolymers of a conjugated diene containing from 4 to 10 carbon atoms per molecule with a polymerizable heterocyclic nitrogen base, copolymers of a conjugated diene containing from 4 to 10 carbon atoms per molecule with styrene asphalt, pitch, mixtures of asphalt and natural rubber, mixtures of asphalt and synthetic rubber, mixtures of pitch and natural rubber, mixtures of pitch and synthetic rubber, epoxy resins, polybutadiene, polybutene, polyisobutylene, hydrogenated polybutadiene, natural waxes, synthetic waxes, polyethylenes, polysulfide rubbers, acrylic resins, polyvinyl resins, and nitro polymers; and from about 0.25 to about 12 parts by weight per 100 parts by weight of said base propellant of a burning rate catalyst consisting essentially of a complex of a pyridine containing copper and hexavalent chromium and selected from the group of compounds characterized by the formula



wherein: R is selected from the group consisting of alkyl and alkenyl radicals containing from 1 to 4 carbon atoms; R′ is a pyridyl radical; m is the number of R′ substituents and is an integer of from 0 to 1; and n is the number of R substituents and is an integer of from 0 to 3.

3,753,349

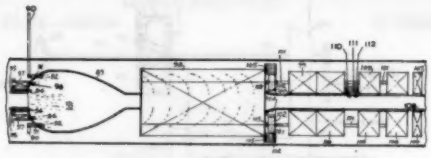
HYDROPLANE CONSTRUCTION

Ronald Leslie Holmes, 30 Wilton Ave., Southampton, Sol. 2HJ Hants, England

Division of Ser. No. 570,606, Sept. 5, 1966, Pat. No. 3,592,154. This application July 12, 1971, Ser. No. 161,466
Int. Cl. B63h 11/02, 11/14
U.S. Cl. 60—227 4 Claims

The invention relates to a water-borne craft of the hydroplane type which is capable of ocean travel at high speed while simultaneously maintaining a high degree of stability and a horizontal aptitude to the craft. The craft is supported by a support assembly in the form of a plurality of vertical structure supports which have a pair of roller shaped floats

positioned to each vertical support through means of a rocker assembly pivotally connected to the vertical supports and mounted for reciprocating movement up and down the support, and shock absorbing means carried by said support to provide a shock absorbing action upon the vertical reciprocation of each pair of floats. A propulsion unit for the craft includes a controlled water inlet means, multi-stage combustion zones for generation of steam and combustion products, a turbine means for generation of electrical power, and jet nozzle means for generation of the required propulsive force.



3,753,350

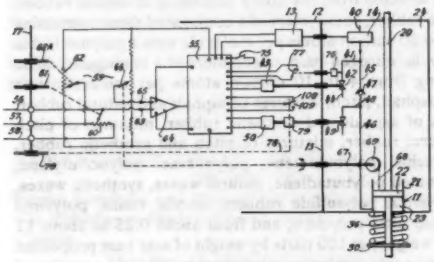
REVERSIBLE HYDRAULIC ACTUATOR WITH SELECTABLE FAIL-SAFE OPERATION

Peter T. M. Nott, Bath, England, assignor to Rotork Limited, Lower Weston, Bath, Somerset, England

Filed Aug. 30, 1971, Ser. No. 175,864

Int. Cl. F15b *13/044*

U.S. Cl. 60—403 **11 Claims**



The invention is concerned with a modulating actuator in which a linearly movable output shaft is movable in one direction by a single acting hydraulic motor and in the other direction by the stored energy of a spring device. The hydraulic circuit for the motor includes two solenoid operated control valves, the operation of which is reversible by a manual control so as to select a desired mode of fail-safe operation in the event of power failure. The actuator can be selected to fail-safe in an end position of the output shaft or to stay put in its actual position of movement.

3,753,351

ENERGY REGAINING APPARATUS AND METHOD FOR ACCELERATING AND DECELERATING CENTRIFUGES

Kurt Pause, Grevenbroich, and Werner Steprath, Gohr, both of Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

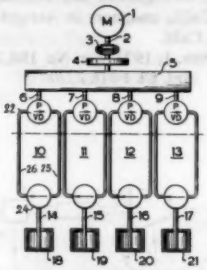
Filed Feb. 24, 1972, Ser. No. 229,093

Claims priority, application Germany, Mar. 6, 1971, P 21 10 736.8

Int. Cl. F16d *33/00*

U.S. Cl. 60—420 **10 Claims**

A set of centrifuges is driven by the hydraulic motors of a set of hydrostatic transmissions whose adjustable pumps have shafts positively connected for rotation with a drive motor. By adjustment of the respective pump, any centrifuge can be accelerated and decelerated. A decelerated centrifuge regains energy for driving the respective hydraulic motor to pump fluid so that the respective pump operates as a motor and aids in driving a centrifuge which is being accelerated.



3,753,352

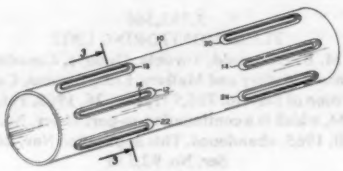
PERFORATE CONDUIT

Paul F. McNally, Overijse, Belgium, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 21, 1971, Ser. No. 145,848

Int. Cl. E02b *11/10*

U.S. Cl. 61—10 **14 Claims**



A perforate conduit comprising an elongated tubing provided with at least one series of longitudinally extending, spaced apart ridges formed in the wall of and extending outwardly from the surface of said tubing. At least one opening is provided in each of said ridges so as to provide communication between the exterior and interior of said tubing.

3,753,353

AUTOMATIC WATER GATE INSTALLATION

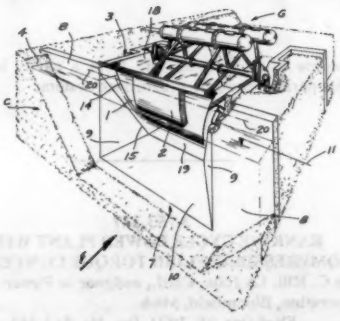
Jacques L. Dubouchet, Larchmont, N.Y., assignor to Societe Generale de Constructions Electriques et Mechaniques (Alsthom), Grenoble, France

Filed Jan. 18, 1971, Ser. No. 107,088

Claims priority, application France, Jan. 20, 1970, 7001836

Int. Cl. E02b *7/40*

U.S. Cl. 61—25 **6 Claims**



The passage in which an automatic gate for constant upstream level control is installed, is formed at its entry end with

vertical partitions disposed perpendicular to the longitudinal axis of such passage, and the angles formed by such vertical partitions and the side walls of the passage are truncated by oblique faces, the intersections of which with such passage side walls are in close proximity to the side edges of the gate apron.

3,753,354

CORROSION-PROTECTED ANCHORING RODS FOR ANCHORING STRUCTURAL PARTS IN THE EARTH, AS WELL AS METHOD OF PRODUCING ANCHORINGS WITH CORROSION-PROTECTED ANCHOR RODS

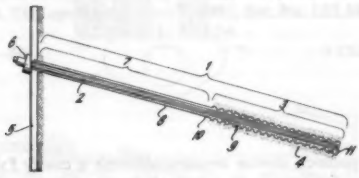
Karlheinz Bauer, 8898 Willelsbacherstr. 5, Schrobenhausen/Obb., Germany

Filed Mar. 31, 1971, Ser. No. 129,715

Claims priority, application Germany, Jan. 12, 1971, P 21 01 236.2

Int. Cl. E02d *5/74, 17/04*

U.S. Cl. 61—35 4 Claims



A corrosion-protected anchoring rod for the anchoring of structural parts in the earth is adapted to be placed in a bore hole formed in the earth, with the rod consisting of a force transmission section adjacent the opening of the bore hole, and a force introduction section adjacent the end of the anchoring rod disposed furthest in the hole. The force transmission section of the rod is covered with a smooth, corrosion-preventing covering, while the force introduction section is also covered with a corrosion-preventing covering having a corrogated profile in order to increase the frictional resistance between the anchoring rod and the surrounding soil. The corrosion-prevented coverings of the anchoring rod are suitably joined to completely enclose the anchoring rod, and a bonding composition is provided in the space between the corrogated covering and the tension member.

3,753,355

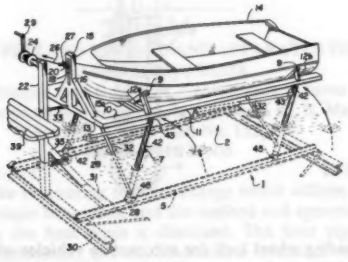
LIFTING DRY DOCK

Glen C. Knoch, Lake Ozark, Mo.

Filed Dec. 2, 1971, Ser. No. 204,272

Int. Cl. B63c *1/02*

U.S. Cl. 61—65 5 Claims



A lifting dry dock for lifting a boat out of the water comprising a subsurface support, a cradle for cradling the boat, and a plurality of legs pivotally connecting the cradle to the subsurface support in a manner which permits movement of the cradle between a lowered position in which the cradle is below the surface of the water a distance sufficient to permit the boat to float thereover and a raised position in which the cradle is clear of the water. A winch is provided for effecting movement of the cradle between its lowered position and its raised position.

3,753,356

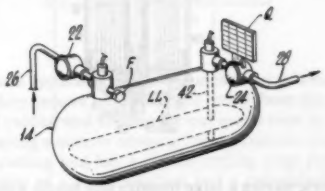
MEANS AND METHOD FOR DETERMINING THE LIQUID REFRIGERANT CHARGE IN A REFRIGERATION SYSTEM

Daniel E. Kramer, Yardley, Pa., assignor to Kramer Trenton Company, Trenton, N.J.

Continuation-in-part of Ser. No. 73,527, Sept. 18, 1970, abandoned. This application May 8, 1972, Ser. No. 253,670

Int. Cl. F25b *49/00*

U.S. Cl. 62—56 8 Claims



Dual sight glass system in the liquid line of a refrigerant circuit. One of the two sight glasses is disposed in the line at a receiver inlet and is inspected to determine the presence of liquid refrigerant in excess of the proper maximum amount. The second sight glass is disposed at the receiver outlet and is inspected to determine whether the liquid refrigerant in the system is insufficient. The latter device and its operation are known by themselves. The refrigerant circuit is hermetically sealed.

3,753,357

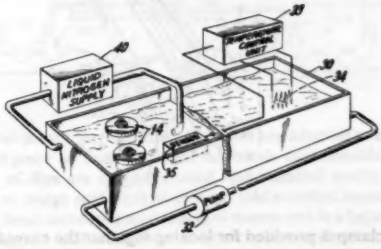
METHOD AND APPARATUS FOR THE PRESERVATION OF CELLS AND TISSUES

Ralph E. Schwartz, Elgin, Ariz., assignor to Ovitron Research Corporation, Avenel, N.J.

Continuation-in-part of Ser. No. 757,195, Aug. 8, 1968. This application Dec. 14, 1970, Ser. No. 97,734

Int. Cl. A61b *19/00*

U.S. Cl. 62—64 14 Claims



The invention contemplates a storage method and apparatus for biological substances by virtue of which solid phase storage is avoided by subjecting the substance to a precompression pressure above atmospheric, and thereafter the specimen is subjected to isovolumetric cooling below 0°C. Where desired, a storage period extension is achieved in solid phase by (a) permitting temperature equilibrium to take place throughout the substance maintained in liquid phase below 0°C as previously described; (b) decompressing the substance sufficiently to permit uniform freezing to take place; and (c) reducing the temperature of the substance to a cryogenic temperature.

3,753,358

APPARATUS FOR TREATING LONG AND BROAD FABRIC WITH LIQUID

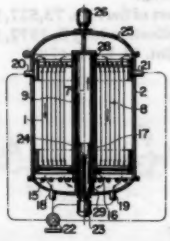
Masao Masuda, No. 80 Shimoyama-cho 2-chome, Mizuho-ku, Nagoya, Japan

Filed July 1, 1971, Ser. No. 158,782

Claims priority, application Japan, Nov. 11, 1970, 45/98769; Nov. 11, 1970, 45/98770

Int. Cl. B05c 8/02

U.S. Cl. 68—150 6 Claims



Fabric having a large breadth and length wound in the form of a cylindrical spiral roll around a reel with a space provided between respective adjacent turns is treated with a treating liquid in a cylindrical vessel while causing relative motion of the roll of fabric and the treating liquid. This new method enables the broad and lengthy fabric such as carpet to be treated uniformly throughout its entire portions with no loss of feel and without any development of entanglement, clustering and bending of the pile of such fabric.

3,753,359

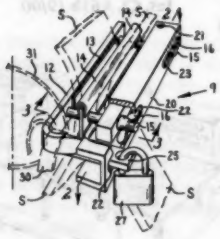
LOCKING SKI CLAMP

Max Frey, 3940 S.W. Altadena Ave., Portland, Oreg.

Filed Oct. 22, 1971, Ser. No. 191,755

Int. Cl. A63c 11/00; E05b 73/00

U.S. Cl. 70—19 11 Claims



A clamp is provided for locking together the curved tips of skis for the purpose of discouraging theft. A pair of outside clamp plates clamps the two skis securely on opposite sides of a center plate, the parts being fastened in clamped position by a padlock. By clamping together the curved end portions, bottom to bottom, the main flat portions of the two skis are disposed at a wide angle to each other making an awkard and very conspicuous bundle which a thief cannot carry away unnoticed. If the back ends of the skis are deeply embedded in a snow bank at such an angle to each other, the application of the clamp to the upstanding front ends makes the skis impossible to remove from the snow and carry away without first digging them out of the snow. By securing the ski pole straps in the clamp, a tripod is formed for standing the skis and poles on the ground or on a floor.

3,753,360

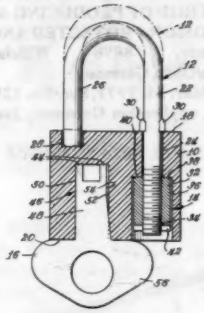
PADLOCK DEVICE

Gerald F. Bower, Elkhart, Ind., assignor to The Bower Manufacturing Co., Inc., Goshen, Elkhart, Ind.

Filed Dec. 6, 1971, Ser. No. 204,985

Int. Cl. E05b 67/38

U.S. Cl. 70—39 6 Claims



A padlock device constructed with a cavity formed in its casing for storing the padlock key and retainer means for releasably holding the key in the cavity. The lock means for the padlock comprises a threaded member disposed within a recess of the casing and in threaded engagement with the longer shank portion of the padlock's shackle.

3,753,361

STEERING WHEEL LOCK FOR AUTOMOTIVE VEHICLES

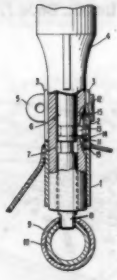
Gerhard Schiesterl, Stuttgart-Vaihingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Mar. 6, 1969, Ser. No. 804,851

Claims priority, application Germany, Mar. 6, 1968, P 16 80 023.0

Int. Cl. B60r 25/02

U.S. Cl. 70—185 9 Claims



A steering wheel lock for automotive vehicles wherein the locking bolt which engages with the steering column is slidably disposed in a lock shaft which is keyed to a fixed mounting sleeve, the key to the mounting sleeve being selectively disengageable through translation thereof into a recess provided in the locking bolt only when the locking bolt is out of engagement with the steering column.

3,753,362

4,5 DIAMINOURACIL SULFATE AS ALGICIDE

Al F. Kerst, and John D. Douros, Jr., both of Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Nov. 9, 1970, Ser. No. 88,095
Int. Cl. A01n *9/22, 15/00*
U.S. Cl. 71—67 12 Claims

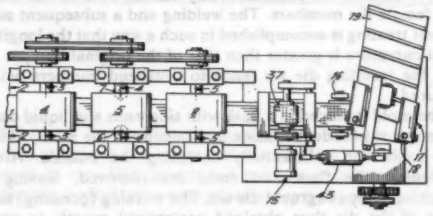
4,5 diaminouracil sulfate can be used to inhibit and/or prevent the growth of many undesirable forms of algae. This invention is particularly concerned with the algicidal properties of 4,5 diaminouracil sulfate against the algae species Scenedesmus, Plectonema, Anabaena, Ankistrodesmus, Oscillatoria, Coccochloris, Chlamydomonas, Lyngbya, Synura, and Chlorella.

3,753,363

HELICALLY WOUND TUBING

John Massey Trihey, Balwyn, Australia, assignor to Johns-Manville Corp., New York, N.Y.

Division of Ser. No. 865,275, Oct. 10, 1969, Pat. No. 3,621,884. This application Apr. 7, 1971, Ser. No. 132,187
Int. Cl. B21c *37/12*
U.S. Cl. 72—50 9 Claims



A locked seam is formed in ducting formed by convoluted metal strip and seam locking adjacent edges of adjacent convolutions, in which one edge is folded to form a pair of inwardly facing channels and the other is folded to form a generally T-shaped flange and the arms of the T-shaped flange are locked within the channels. The seam may be formed by folding the edges of the strip before it is convoluted to provide along one edge an open U-shaped element facing out of the plane of the strip. A complementary flange is formed along the other edge, generally of similar U-shape or L-shape and after the strip is convoluted and the edges are mated the U-shape is deformed to form the seam. Apparatus for forming the seam comprises a mandrel removably mounted on a frame and two pairs of forming means disposed about the mandrel, one pair being fixed in its location relative to the frame and the other pair being movable with the mandrel, whereby the mandrel can be changed without requiring adjustment of the forming means.

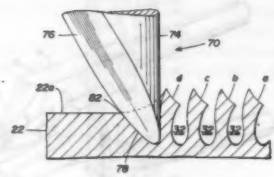
3,753,364

HEAT PIPE AND METHOD AND APPARATUS FOR FABRICATING SAME

James E. Runyan, and George M. Grover, both of Santa Fe, N. Mex., assignors to Q-dot Corporation, Santa Fe, N. Mex.

Filed Feb. 8, 1971, Ser. No. 113,394
Int. Cl. B21d *53/06*
U.S. Cl. 72—71 15 Claims

A unit for recovering thermal energy which utilizes a plurality of unique heat pipes, and the method and apparatus for fabricating the heat pipes is disclosed. The heat pipes are disposed horizontally and are filled with a volume of working fluid sufficient to cause the liquid phase to travel in either direction by gravity. Circumferential capillary grooves in the side walls of the heat pipes transport the liquid phase vertically above the liquid level to increase the area of the liquid-vapor interface. Additionally, the solid metal strips which form the grooves provide a low impedance thermal path from the walls of the heat pipe to the liquid-vapor interface where evaporation and condensation occur. These two factors significantly increase the efficiency of the system. A divider plate having an X-shaped cross section separates the liquid phase from the high velocity vapor phase to prevent slugging under high energy transfer conditions. The divider plate is operative when the unit is disposed in either of two horizontal positions.



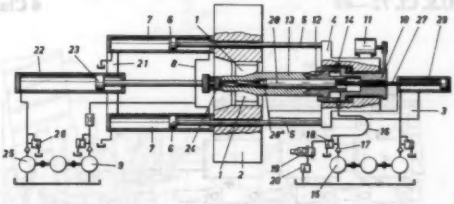
The method and apparatus provides a means for fabricating a spiraled capillary groove by cutting the metal from the wall of the tube and raising and folding the cut metal over to provide a groove having a narrow opening for a maximum capillary action. The cutting tool has a curved cutting edge formed by the intersection of a planar surface and a cylindrical surface. Apparatus for driving the cutting tool is also described.

3,753,365

SWAGING MACHINE FOR THE INTERNAL PROFILING OF TUBULAR WORKPIECES

Bruno Kralowetz, Weinleiten 142, St. Ulrich near Steyr, Austria

Filed Apr. 21, 1972, Ser. No. 246,137
Claims priority, application Austria, May 6, 1971, A 3940/71
Int. Cl. B21j *13/08*
U.S. Cl. 72—76 8 Claims



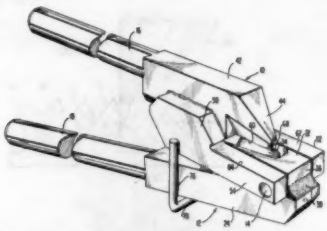
Mandrel means formed with a shoulder are adapted to enter said workpiece so that the latter surrounds said shoulder. A plurality of dies are spaced around said mandrel means and adapted to swage said workpiece onto said mandrel means. A gripping head surrounds said mandrel means and is adapted to axially support said workpiece at one end thereof and operable to rotate said workpiece about its axis and to advance it toward said dies at the same time. A holder-up is adapted to axially support said workpiece at the opposite end thereof and movable in the axial direction of said workpiece. Means are provided to apply a hydraulic backpressure to said holder-up so that the same yieldably resists the movement of said workpiece as the same is advanced by said gripping head. The gripping head comprises means defining a chamber adapted to contain a cushion of liquid under pressure, which cushion is adapted to axially support said workpiece, and a piston interposed between said cushion and said workpiece and surrounding said mandrel means. The machine also comprises valve means operable to reduce the pressure of said cushion when said shoulder enters between said dies.

3,753,366

PROCESS OF BENDING STRUCTURAL MEMBERS AND TOOL THEREFOR

James C. White, P. O. Box 5495, Station B, Greenville, S.C.

Division of Ser. No. 786,103, Dec. 23, 1968. This application Feb. 8, 1971, Ser. No. 113,639
Int. Cl. B21d 9/08
U.S. Cl. 72—409 4 Claims



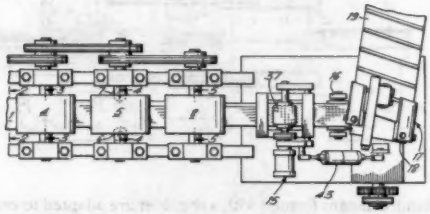
Structural members such an angle iron or channel members are bent to a desired radius by crimping the flange or flanges thereof to provide V-shaped pockets or crimps therein. The crimping tool includes a crimping jaw which, before crimping, locates the tool against the leg of the angle or channel member but which swings slightly away from it during crimping movement effected on the intersected flange so as to avoid tearing or shearing the flange while still locating the crimp very close to the leg. An improved form of angle or channel member is provided with openings along the intersection of the leg and flange to allow accurate positioning of the crimp and to further militate against tearing or shearing of the flange.

3,753,367

HELICALLY WOUND TUBING

John Massey Trihey, Balwyn, Australia, assignor to Johns-Manville Corporation, New York, N.Y.

Division of Ser. No. 865,275, Oct. 10, 1969, Pat. No. 3,621,884. This application Apr. 7, 1971, Ser. No. 132,188
Int. Cl. B21c 37/12
U.S. Cl. 72—49 6 Claims



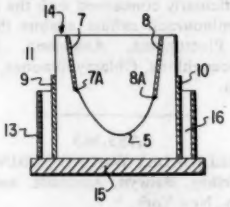
A locked seam is formed in ducting formed by convoluted metal strip and seam locking adjacent edges of adjacent convolutions, in which one edge is folded to form a pair of inwardly facing channels and the other is folded to form a generally T-shaped flange and the arms of the T-shaped flange are locked within the channels. The seam may be formed by folding the edges of the strip before it is convoluted to provide along one edge an open U-shaped element facing out of the plane of the strip. A complementary flange is formed along the other edge, generally of similar U-shape or L-shape and after the strip is convoluted and the edges are mated the U-shape is deformed to form the seam. Apparatus for forming the seam comprises a mandrel removably mounted on a frame and two pairs of forming means disposed about the mandrel, one pair being fixed in its location relative to the frame and the other pair being movable with the mandrel, whereby the mandrel can be changed without requiring adjustment of the forming means.

3,753,368

BUMPER REPAIR TOOLS AND PROCESS OF MANUFACTURE

Imre Lang, Santa Barbara, Willowdale, Toronto, Canada

Continuation-in-part of Ser. No. 870,468, Oct. 22, 1969, abandoned. This application June 11, 1971, Ser. No. 152,273
Int. Cl. B21d 37/14
U.S. Cl. 72—475 1 Claim



This application discloses a mold for making die sets for bumper repair, a method of making the mold, and a method of making the dies. The mold is made from an undamaged bumper section to which extensions are added to make an enclosure suitable for simultaneously casting both of the male and female die members. The welding and a subsequent step of heat treating is accomplished in such a way that the longitudinal curvature is greater than that of the original bumper so that the resulting die set tends to overbend bumpers being repaired.

The mold is placed in a flask with side walls and liquid casting metal is introduced inside and outside of the mold, filling the inside and substantially enclosing the outside. After hardening, the flask and mold are removed, leaving a matching, fully congruent die set. The working (pressing) surfaces of the die thus obtained correspond exactly to each other and are true copies of the faultless original bumper segment, except for the added curvature.

ERRATUM

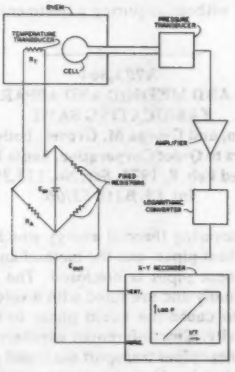
For Class 72—214 see:
Patent No. 3,753,370

3,753,369

RECORDING OF RECIPROCAL OF TEMPERATURE

Lewis Fowler, and Walter N. Trump, both of St. Louis, Mo., assignors to Monsanto Corporation, St. Louis, Mo.

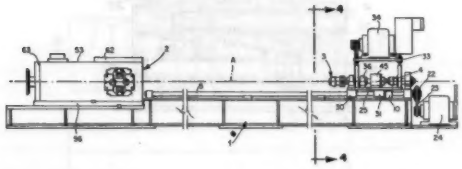
Filed Dec. 28, 1970, Ser. No. 102,123
Int. Cl. G01n 25/00; G01k 3/00
U.S. Cl. 73—15.4 5 Claims



Direct recording of the relationship between a measured property and the reciprocal of absolute temperature is af-

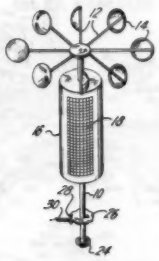
forded in viscosity and vapor pressure measurements by means of resistance thermometry in cooperation with a bridge circuit.

3,753,370
HIGH SPEED TUBE MILL
Claus L. Sporck, Traverse City, Mich., assignor to Hitco, Gardena, Calif.
Filed Aug. 24, 1970, Ser. No. 66,342
Int. Cl. B21b 21/06
U.S. Cl. 72—214 6 Claims



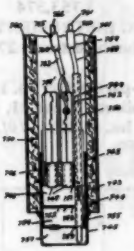
Apparatus for rocking the work rollers and turning and feeding the blank of a pilger mill to provide a mill which will operate at very high speeds and produce accurately dimensioned thin walled tubes even of refactory type metals.

3,753,371
WIND CHILL METER
Robert W. Anderson, 443 Hauck Rd., Bridgewater, N.J.
Filed May 11, 1971, Ser. No. 142,298
Int. Cl. G01w 1/06
U.S. Cl. 73—344 6 Claims



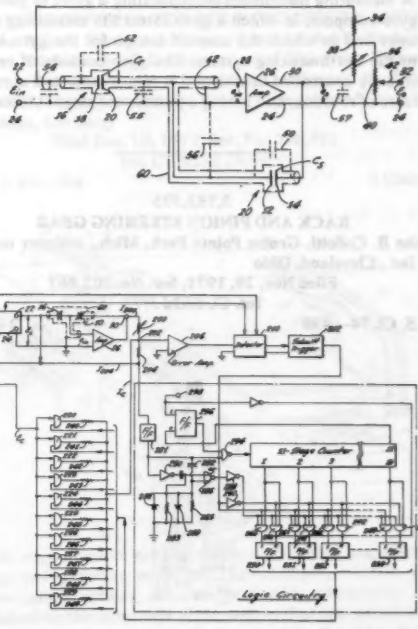
Wind cup assembly driving a drum having a scale of wind chill valves. A thermometer has indicator for the scale. A hair spring restrains the drum and there is a control wheel to suppress variations due to gustiness. In one embodiment there is gearing from the wind cups having variable toothed spacing for driving the drum.

3,753,372
DEVICE FOR SAMPLING MOLTEN METAL
William J. Collins, 7005 Madison St., Merrillville, Ind.
Division of Ser. No. 61,625, Aug. 6, 1970, Pat. No. 3,656,338.
This application Nov. 30, 1971, Ser. No. 203,258
Int. Cl. G01n 1/12; G01k 13/12
U.S. Cl. 73—354 18 Claims



Apparatus of the type in which a sample receiving means is positioned in the end of an elongated tube intended to be dipped into a body of molten metal.

3,753,373
TRANSDUCER SYSTEM
Neil L. Brown, El Cajon, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.
Filed Oct. 22, 1965, Ser. No. 501,731
Int. Cl. G01k 5/52; G01l 9/12; G01r 27/26
U.S. Cl. 73—398 C 4 Claims



This invention relates to a system for measuring the value of a variable capacitor. The capacitor is included in a circuit with a reference capacitor which is connected in series with the variable capacitor. An operational amplifier having a high gain is connected in series with one of the variable and reference capacitors and is connected in parallel with the

other one of the variable and reference capacitors. An input voltage is applied to the one of the variable and reference capacitors and an output voltage is derived from the operational amplifier. The relative values of the output and input voltages indicate the relative values of the variable and reference capacitors.

3,753,374

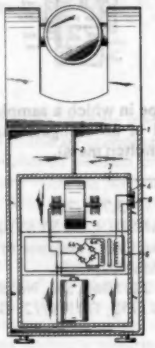
MEASURING INSTRUMENT WITH GYRO

Lothar Strassburg, Humboldstrasse 27, 464 Wattenscheid-Eppendorf, Germany

Continuation-in-part of Ser. No. 1,193, Jan. 7, 1970, abandoned. This application June 21, 1972, Ser. No. 264,795

Int. Cl. G01c *19/10*

U.S. Cl. 74—5.7 **2 Claims**



A measuring instrument incorporating a gyro, in particular a gyro-compass, in which a gyro forms the measuring device proper and in which the current source for the gyro is built into the north-seeking system. The gyro consists of an electronically controlled brushless d.c. motor, adjusted as regards its rate of rotation, and having a permanent magnet rotor.

3,753,375

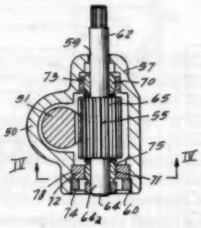
RACK AND PINION STEERING GEAR

John B. Colletti, Grosse Pointe Park, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Nov. 29, 1971, Ser. No. 202,867

Int. Cl. B62d *3/12*

U.S. Cl. 74—498 **2 Claims**



A rack and pinion steering gear wherein the rack bar is supported in the rack tube by bearing sleeves journalled in the axial open ends of the tube without use of a yoke. In order to provide alignment adjustment, the pinion has at least one end thereof supported in an adjustable eccentrically mounted spherical bearing to allow movement of the pinion with regard to the rack.

3,753,376

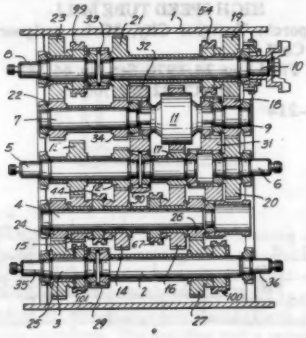
TRANSFER AND DIFFERENTIAL REDUCTION BOX FOR MOTOR VEHICLES

Jose Luiz Whitaker Ribeiro, Sao Paulo, Brazil, assignor to Engesa-Engenheiros Especializados S.A., Sao Paulo, Brazil

Filed Feb. 9, 1971, Ser. No. 113,953

Int. Cl. F16h *37/08, 37/06*

U.S. Cl. 74—665 GA **12 Claims**



A transmission box with power take-off, for transmitting power to four or six wheels, comprising one or more internal differentials, which may be locked, a clutching system with two parallel shafts alternately lockable, through the agency of a transverse rod and grooves in the shafts; interchangeable parts and parallel shafts equidistant from one another; the clutching system includes a number of rods articulated one to the next. The locking of the differential is provided by way of a gear transmission and clutch in parallel with the differential outputs.

3,753,377

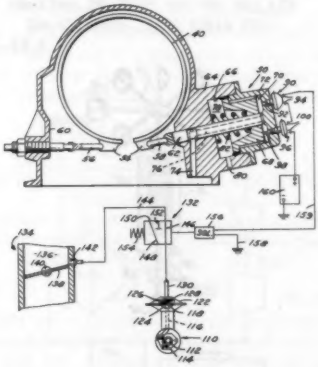
AUTOMATIC TRANSMISSION SHIFT CONTROL ENGINE SPARK CONTROL

Norman T. General, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1971, Ser. No. 212,490

Int. Cl. B60k *21/00*; F02p *5/04*

U.S. Cl. 74—856 **6 Claims**



The engine spark timing includes an electrically actuated on-off valve in the vacuum line between the carburetor spark port and the distributor servo actuator, the valve being actuated to permit vacuum to advance the distributor only when the automatic transmission associated with the engine is con-

ditioned for a high speed gear ratio and the intermediate speed gear ratio is disestablished; the fluid pressure actuating the intermediate and high speed ratio servos to their respective positions simultaneously actuating a pressure responsive switch in series power flow arrangement with an intermediate gear ratio servo position indicating switch to complete the circuit to the vacuum switch.

3,753,378

RACK AND PINION VARIABLE RATIO STEERING GEAR

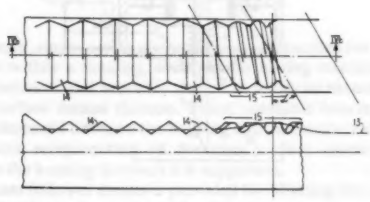
Arthur E. Bishop, 54 Tobruk, Cremorne, New South Wales, Australia

Filed Aug. 16, 1971, Ser. No. 171,842

Claims priority, application Australia, Aug. 17, 1970, 2222/70; July 5, 1971, 3086/71

Int. Cl. F16h *1/04*

U.S. Cl. 74—422 14 Claims



A variable ratio steering mechanism for a vehicle having an axially movable rack meshing with a helical pinion the axis thereof making an angle with the axis of the said rack, the rack having a group of teeth at its center of varying form and varying inclinations with respect to the axis of the rack, the inclination of the teeth of said group becoming less closely aligned with the pinion axis as the teeth are more remote from the center of said rack, said teeth thereby meshing with the teeth of the pinion at varying effective pitch radii in a predetermined manner.

3,753,379

CUT-OFF DEVICES FOR CONTINUOUS ROD CIGARETTE-MAKING MACHINES AND OTHER SIMILAR MACHINES

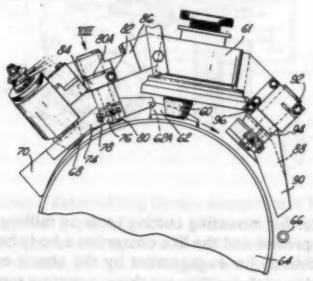
Desmond Walter Molins, and Edward George Preston, both of London, England, assignors to Molins Limited, London, England

Filed Feb. 17, 1971, Ser. No. 115,953

Claims priority, application Great Britain, Feb. 17, 1970, 7.626/70

Int. Cl. A24c *5/30*

U.S. Cl. 83—174 17 Claims



A cut-off device for a cigarette or other similar rod-making machine includes a damping member which is arranged to touch the knife of the cut-off device, at least in the event of the knife vibrating at or above a predetermined amplitude, so as to damp down vibrations of the knife.

3,753,380

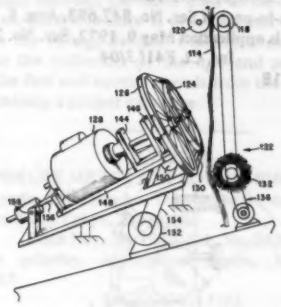
CUTTING SYSTEM HAVING IMPROVED ANVIL MEANS

Charles A. Lee, Knoxville, Tenn., assignor to International Paper Company, New York, N.Y.

Filed June 24, 1971, Ser. No. 156,185

Int. Cl. B23d *25/06*, *53/04*

U.S. Cl. 83—315 4 Claims



A cutting system for flexible work including a cutter having a cutting edge and anvil means having a plurality of closely-spaced elongate work-contacting means whose unattached ends contact the work, such work-contact means in the aggregate being sufficiently stiff in their longitudinal direction to constrain the work against movement away from the cutter and being flexible in a direction generally laterally of their longitudinal direction to receive the cutting edge of the cutter therebetween.

3,753,381

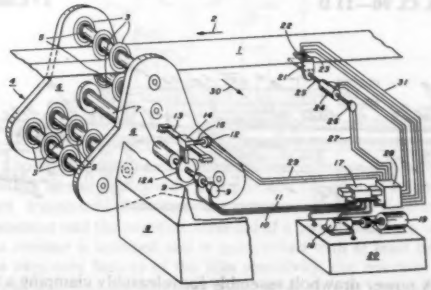
WEB EDGE CONTROL FOR STRIP PROCESSING LINES

Theodor Reime, Ennepetal-Milspe; Gunter Schnell, Bochum; Anton Dinkelbach, Gelsenkirchen, and Friedrich Wippermann, Dortmund, all of Germany, assignors to Gebr. Eickhoff, Maschinenfabrik Und Eisengiesserei m.b.H., Bochum, Germany

Filed Dec. 10, 1971, Ser. No. 206,791

Int. Cl. B23d *19/06*

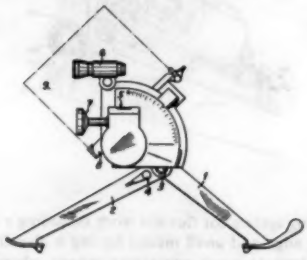
U.S. Cl. 83—364 3 Claims



Web edge control apparatus for corrugated paperboard cutting and grooving apparatus, for example, wherein two electro-optical sensing devices (preferably photocells) are positioned on the same side of the web so that one device normally sights on the relatively dark web while the other sights on a lighter background adjacent the web. If the web should shift to one side or the other, either both devices will sight on the dark web as when the web moves toward one side, or both devices will sight on the lighter background as when the web moves in the opposite direction. When either one of these events occurs, the cutting and grooving apparatus is caused to move in the same direction as the movement of the web to

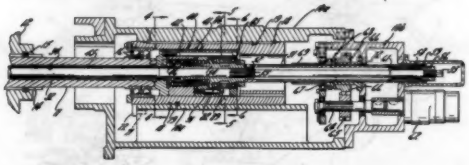
maintain a fixed relationship of the cutting and grooving apparatus with respect to the edge of the web.

3,753,382
INFANTRY WEAPON AND ITS AMMUNITION
Maurice Rusbach, Vernier-Geneva, Switzerland, assignor to Sarmac S.A., Carouge, Switzerland
Continuation-in-part of Ser. No. 847,693, Aug. 5, 1969, abandoned. This application May 9, 1972, Ser. No. 251,699
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.815 4 Claims



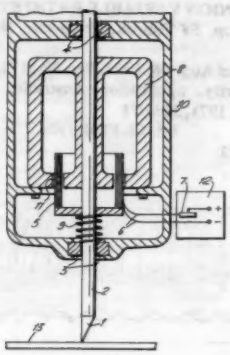
The invention concerns an infantry weapon and its ammunition. The weapon includes a stand provided with an aiming device for orientating a movable support on which interchangeable launching tubes are fixed. The ammunition includes packing cases for the transport and storage of shells to be shot by this infantry weapon; these cases include tubes in which the shells are nested, which form simultaneously, when the cases are mounted on the said stand, the launching tubes of the weapon.

3,753,383
POWER OPERATED DRAWBOLT
Frederick L. Schmidt, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.
Filed Apr. 4, 1972, Ser. No. 241,028
Int. Cl. B23b *5/26*
U.S. Cl. 90—11 D 17 Claims



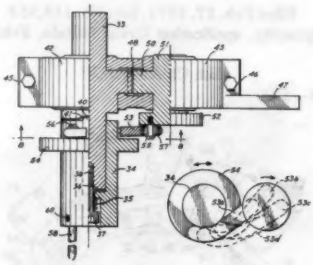
A power drawbolt assembly for releasably clamping a tool in the socket of a machine tool spindle. The assembly includes a drawbolt that is biased in a rearward direction relative to the spindle and in an opposite forward direction relative to a concentrically mounted drive sleeve whereby the drawbolt is readily accessible for engaging a tool automatically inserted into the spindle socket and is resiliently supported to absorb excessive axial forces that may be imparted to the drawbolt. A separate ejector tube mounted concentrically on the drawbolt is adapted to be forwardly moved relative to the spindle and drawbolt to strike and positively release a tool adaptor from seating engagement with the spindle socket after the drawbolt has completely unthreaded from the tool adaptor. The operation of the drawbolt and ejector tube are synchronized by an actuating mechanism driven from a single motor.

3,753,384
APPARATUS FOR THE ADJUSTMENT OF THE WORKING PRESSURE OF A TOOL
Ole Arnt Anfindsen, Gudesgt 18, 3600 Kongsberg, Norway
Filed Oct. 12, 1971, Ser. No. 188,178
Claims priority, application Norway, Oct. 12, 1970, 3823
Int. Cl. B23d *13/00*; B23q *5/28*
U.S. Cl. 90—24 R 6 Claims



A machining tool is attached to a current carrying annular coil which is mounted for axial movements in an associated annular gap of a magnetic circuit, energized by at least one suitable permanent magnet and/or electromagnet. The terminal leads of the coil are connected to a variable current source. In this arrangement the working pressure of the tool against a workpiece may be very accurately regulated by suitable adjustment of the current supplied to the coil from the variable current source.

3,753,385
MOUNTING ADAPTER FOR CUTTING TOOLS
Vincent Zarlengo, 3530 Chase St., Wheatridge, Colo.
Filed Aug. 6, 1971, Ser. No. 169,672
Int. Cl. B23d *5/02*
U.S. Cl. 90—31 5 Claims

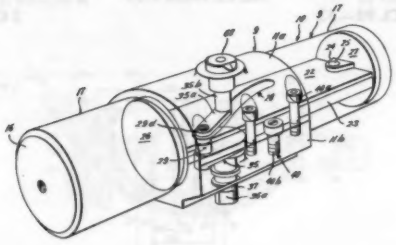


An adapter for mounting cutting tools on milling machines, lathes, drill presses and the like comprises a body having an attaching extension for engagement by the chuck or other attaching device of the milling machine, a cutting tool attaching member movable axially with respect to the body and a control member arranged to be held stationary with respect to the milling machine. Cam members on the body and on the tool attaching member produce movement of the cutting tool such that it may move periodically or intermittently into and out of engagement with the work.

3,753,386
VALVE ACTUATOR

Floyd L. Scott, Jr., 7922 Westglen Dr., Houston, Tex.

Filed Mar. 3, 1971, Ser. No. 120,585
Int. Cl. F01b *9/00, 25/26, 31/12*
U.S. Cl. 92—5 1 Claim



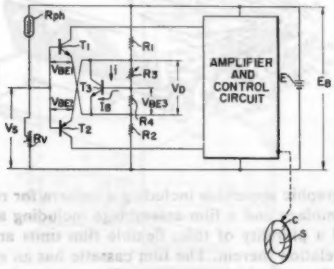
Spaced, single acting piston means are mounted for reciprocation within a housing, such pistons having interconnected therebetween and movable therewith a carrier means having cam surface means thereon. Fixed, rotatable bearing means are interposed between the housing and cam surface carrier to facilitate reciprocation of the cam surface carrier means within the housing in which it is supported.

A cam follower means is provided for abutting the cam surface in the carrier, and crank means is connected therewith and is provided with means for connecting to a valve stem so that reciprocation of said cam surface carrier means in the housing causes the cam follower to move along said cam surface means and impart rotation to the crank arm means and the valve stem connected therewith. An indicator is connected with the cam follower to indicate externally of the housing the open or closed condition of the valve.

3,753,387
BRIDGE TYPE EXPOSURE METER

Osamu Maida, Toshima-ku, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 22, 1972, Ser. No. 282,712
Claims priority, application Japan, Sept. 2, 1971, 46/67691
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CE 8 Claims

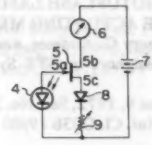


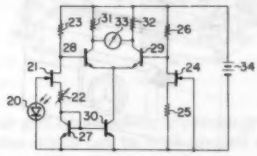
An exposure determining device comprises a bridge circuit which includes a photoelectric element for receiving light from an object, and first, second and third resistors. The first resistor is variable for controlling the balance of the bridge circuit and for introducing an exposure factor. One end of the first resistor is connected to one end of the photoelectric element, and one end of the second resistor is connected to the other end of the photoelectric element. One end of the third resistor is connected to the other end of the first resistor. Means for detecting the balance of the bridge circuit is provided and includes *npn* and *pnp* transistors. The *npn* transistor has its base connected to the junction between the photoelectric element and the first resistor and has its emitter connected to the other end of the third resistor. The *pnp* transistor has its base connected to that junction and has its emitter connected to the other end of the second resistor. The detecting means may produce a first and a second signal representing the balance and unbalance of the bridge circuit. A voltage divider is connected between the other ends of the second and third resistors. A third transistor is provided and has its base connected to the voltage divider. Control circuit means is connected to the collectors of the *npn* and *pnp* transistors to receive the first and second signals from the detecting means for determining a proper exposure.

3,753,388
EXPOSURE METER EMPLOYING PHOTODIODE

Kenji Toyoda, Shinjuku-ku, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 30, 1971, Ser. No. 203,350
Claims priority, application Japan, Nov. 30, 1970, 45/105715
Int. Cl. G01j *1/42*
U.S. Cl. 95—10 R 18 Claims





Exposure meter using a photodiode, wherein open-circuit voltage of the photodiode is applied to the gate of a field-effect transistor. Between the source of said field-effect transistor and the negative terminal of a power source, a variable resistor is inserted and is interlocked with at least one of the exposure factors of the film sensitivity, the aperture of a photo-lens and the exposure time, so as to vary the value of the resistance of the variable resistor.

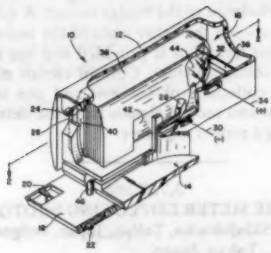
3,753,389
BATTERY CONTACT WIPER FOR CAMERAS

David E. Monks, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1972, Ser. No. 231,175
Int. Cl. G03b *19/02*
U.S. Cl. 95—11 7 Claims

A camera housing defines a cavity for receiving a battery, and a door is movable between open and closed positions to provide access to the cavity. A pair of electrical contacts engage the battery, and a projection on the door moves a

received battery relative to the contacts in response to movement of the door between its open and closed positions so as



to provide rubbing engagement between the contacts and the battery.

3,753,390

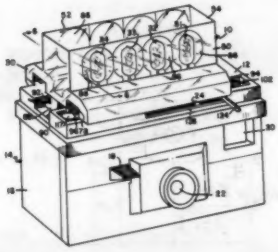
PERCUSSIVE PHOTOFLASH LAMP ARRAY WITH SELECTIVE ACTUATING MECHANISM

Harold L. Hough; Emery G. Audesse, and Warren H. Hay, all of Salem, Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 9, 1972, Ser. No. 261,534

Int. Cl. G03b *19/00*

U.S. Cl. 95—11 R **19 Claims**



A photoflash assembly comprising a plurality of percussively-ignitable flashlamps arranged in a linear array with respectively associated reflectors and preenergized striker springs, a support member attached to an associated camera and adapted to slidably receive the flashlamp array, and an actuating mechanism retained in the support member for selectively conrolling the one or more lamps of the array to be fired in response to shutter operation. The selective actuating mechanism includes a channel member which is pivotally mounted parallel to the array and spring loaded within a recess of the support member. A spring-loaded sliding plate is retained in the channel with its position therealong being determined by engagement with one of the preenergized striker springs. Upon pivoting of the channel member in response to operation of the camera shutter, the slide plate releases the overlying striker spring to fire a corresponding one of the flashlamps. A spring-loaded latch enables the slide plate to be shifted so as to underlie two striker springs and thereby enable the firing of two lamps simultaneously. Subsequent to lamp firing, the spring-loaded plate automatically advances to the next preenergized striker spring.

3,753,391

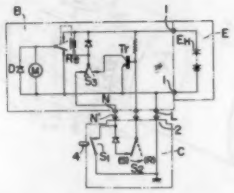
MOTOR-DRIVEN WINDING DEVICE OF CAMERA

Shuji Kimura, Setagaya-ku, and Kouichi Daitoku, Ohta-ku, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 886,621, Dec. 19, 1969, abandoned. This application Dec. 9, 1971, Ser. No. 206,561

Int. Cl. G03b *9/00*

U.S. Cl. 95—53 **2 Claims**



A camera having a motor-driven winding device is provided with a detachable remote control unit having a shutter release button and a change-over switch to effect selection between single-frame phototaking and continuous phototaking. During remote control operation the change-over switch and shutter release button are electrically interconnected by means of an electrically conductive cord.

3,753,392

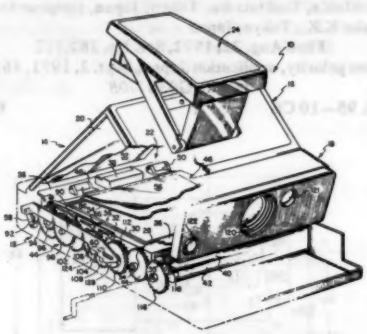
FILM-ADVANCING APPARATUS

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 65,053, Aug. 19, 1970, Pat. No. 3,683,771. This application Aug. 12, 1971, Ser. No. 171,127

Int. Cl. G03b *17/50*

U.S. Cl. 95—13 **17 Claims**



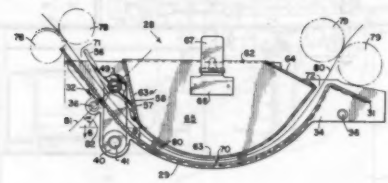
Photographic apparatus including a camera for receiving a film assemblage and a film assemblage including a film cassette and a plurality of thin, flexible film units arranged in stacked relation therein. The film cassette has an exit in one end wall through which a foremost film unit is adapted to be moved after exposure and an opening located near an opposite end of the film cassette. The camera further includes film-advancing apparatus including a first component which is adapted to enter the opening in the cassette and engage the foremost film unit at or near an end thereof or at an edge thereof most distant from the exit and move the foremost film unit through the exit, and a second component including a pair of processing rollers which is adapted to receive the film unit and continue its movement toward the exterior of the camera while spreading a processing liquid between elements of the film unit to initiate formation of a visible image.

3,753,393

LIQUID DEVELOPER SYSTEM FOR ELECTROSTATIC COPIER

George P. Niesen, Niles, and Edward Domeco, Glenview, both of Ill., assignors to A. B. Dick Company, Niles, Ill.

Filed May 21, 1971, Ser. No. 145,607
Int. Cl. G03d 3/12
U.S. Cl. 95—94 R 12 Claims



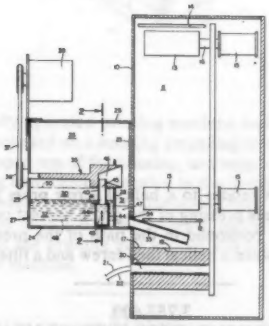
Upper and lower guides are curved in the direction of the path of movement of the copy material to be developed and extend transversely of such path for a distance greater than the width of the copy material. Opposed walls are connected with the ends of these guides to define a confined arcuate space with an inlet slot and an outlet slot. A liquid developer distribution outlet opens into such arcuate space adjacent to and inwardly of the inlet slot for distributing a flow of developer fluid in a pattern extending transversely of said path for a distance substantially the same as the width of the copy material. The liquid developer is forced through said outlet under pressure resulting in a turbulent flow of the developer liquid throughout the arcuate space thereby causing a substantial quantity of fresh, active, charged toner particles to come into contact with the latent electrostatic image on the copy material.

3,753,394

LIQUID METERING APPARATUS FOR PHOTOGRAPHIC DEVELOPING DEVICE

Paul E. Kitch, West Springfield, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.

Filed Dec. 18, 1969, Ser. No. 886,132
Int. Cl. G03d 3/12
U.S. Cl. 95—94 G 7 Claims



Liquid metering apparatus for removing a predetermined amount of processing liquid from a reservoir in which the liquid level may vary, and feeding the removed liquid through a conduit to a developing chamber. The metering apparatus includes a cyclically immersed dipper having a chamber therein of a configuration enabling the separation and transfer of a precise amount of liquid from the reservoir even if the level of liquid in the reservoir varies.

3,753,395

PHOTO-THERMOGRAPHIC RECORDING PROCESS WITH 5-PYRAZOLANE

Albert Lucien Poot, Kontich, and Jan Frans Van Besauw, Brasschaat, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Apr. 8, 1971, Ser. No. 132,585
Claims priority, application Great Britain, Apr. 9, 1970, 16,999/70
Int. Cl. G03e 11/12
U.S. Cl. 96—28 9 Claims

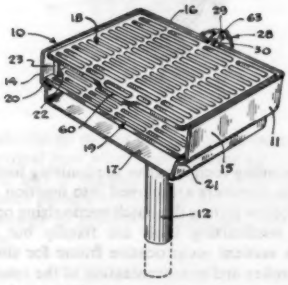
A photosensitive recording material containing a pyrazolin-5-one reducing agent having at least one hydrogen atom in its 4-position in chemical interreactive relationship with a photoreducible dye capable when exposed to activiating electromagnetic radiation adsorbable by the dye of initiating oxidation of the pyrazolin-5-one reducing agent, whereby imagewise exposure of the material to such radiation causes the reducing properties of said pyrazolin-5-one agent to be substantially eliminated in the exposed areas thereof and an image recording method using the same. The material can also contain a bi-imidazolyl compound.

3,753,396

COOKING DEVICE

Walter Koziol, Russell, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Continuation of Ser. No. 800,634, Feb. 19, 1969, abandoned.
This application Dec. 31, 1970, Ser. No. 103,309
Int. Cl. A47j 37/04
U.S. Cl. 99—450 10 Claims



A barbecue grill type cooking apparatus is constructed with a grid member which can be both pivoted and rotated on a base member while simultaneously retained on the base member. The pivoting, rotating and retaining is effected by a unitary means which preferably is a ball and socket arrangement.

3,753,397

APPARATUS FOR SECTIONIZING CITRUS FRUIT

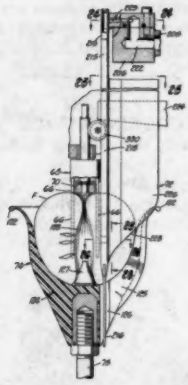
Robert S. Shrewsbury, Dunedin; J. D. Webb, Clearwater, both of Fla., and R. C. Bushman, Claremont, Calif., assignors to Brown International Corporation, Covina, Calif.

Division of Ser. No. 697,215, Jan. 11, 1968, Pat. No. 3,566,940. This application Nov. 27, 1970, Ser. No. 93,022
Int. Cl. A23n 15/00
U.S. Cl. 99—491 17 Claims

It is old to sectionize a single peeled citrus fruit by a procedure wherein the fruit is penetrated by a set of tines of a fruit holder for rotating the fruit step by step in synchronism with associated reciprocating sectionizing tool means. The sectionizing tool means comprises a pair of tools that straddle the radial membranes of the fruit in succession for successive severance of the fruit sections, severance being accomplished largely by concentrated jets of water directed radially from the tools along opposite sides of the membranes. Indexing the

rotation of the peeled fruit with respect to the successive radial membranes is accomplished by inserting the tip of one of the pair of tools into the rotating fruit and terminating the rotation in response to impingement of a radial membrane against the tool.

The present invention is an apparatus for processing batches of peeled fruit in this general manner in rapid succession for a high rate of production. While one batch is being sectionized on a plurality of fruit holders, fruit of a new batch are being manually impaled on upright spikes of a corresponding plurality of fruit holders. After a batch sectionizing operation, the downwardly extending sets of tines of the plurality of fruit holders are aligned axially with the corresponding loading spikes and the new batch is transferred to the tines of the fruit holders. The fruit holders are then shifted to positions adjacent corresponding reciprocative sectionizing tools and corresponding cup members are moved into position to support the fruit from below during the batch sectionizing operation.



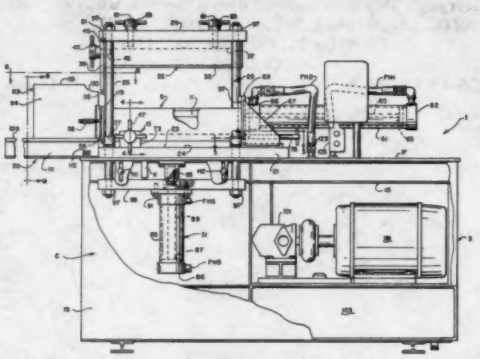
All of the sectionizing tools are fixedly but adjustably mounted on a vertical reciprocative frame for simultaneous sectionizing strokes and synchronization of the rotation of the fruit with the operation of the sectionizing tools is accomplished by employing cam means on the vertically reciprocative frame to actuate the fruit holders. Indexing of the rotating fruit relative to the successive radial membranes of the fruit is accomplished by providing individual clutches for the fruit holders and disengaging each clutch in response to impingement of a radial membrane of the corresponding rotating fruit against the corresponding partially inserted fruit sectionizing tool.

3,753,398
MEAT PRESS

Daniel Dohm, Jr., St. Louis, Mo., assignor to Cashin System, Long Island, N.Y.

Filed Aug. 20, 1971, Ser. No. 173,478
Int. Cl. B30b *7/04*
U.S. Cl. 100—53 **11 Claims**

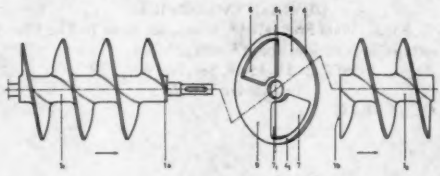
A press for shaping frozen meat into an elongate block or "log" of uniform cross-section, having a lower die and an upper die movable between a raised retracted position clear of the lower die and a lowered closed position on the lower die, the dies forming a cavity extending lengthwise thereof when the upper die is closed. The upper die carries a plate at its forward end for closing the forward end of the cavity, and a ram is movable in the cavity for compressing frozen meat therein against the plate to form a block of meat, and for ejecting the block of meat on raising the upper die and plate. The block is ejected onto a delivery chute provided with a guard. The dies, plate and chute are readily removable without the use of tools for cleaning.



3,753,399
CONTINUOUS HELICAL ACREW PRESS

Rene Alfred Francois Dessoris, Cité du Soleil, Les Fenouilléres, Aix-en-Provence, France

Filed Mar. 26, 1971, Ser. No. 128,319
Claims priority, application France, Apr. 22, 1970, 7014631
Int. Cl. B30b *3/02*
U.S. Cl. 100—145 **4 Claims**



The invention relates to a helical screw press particularly for the continuous pressing of the grape harvest comprising a static obturator positoned in the path of the pressed matter and located between a helical feed screw and a filter cylinder.

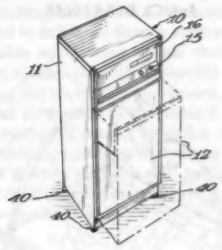
3,753,400
REFUSE COMPACTOR SUPPORT MEANS

Frank E. Miller, Danville, Ky., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 8, 1971, Ser. No. 178,606
Int. Cl. B30b *15/00*
U.S. Cl. 100—100 **9 Claims**

A refuse compactor having a receptacle in which refuse is compacted for facilitated disposal. The compactor includes an outer cabinet and improved means at the lower end of the cabinet for enclosing moving parts of the compactor and for

selectively movably carrying the compactor, such as for moving the compactor over a floor surface during installation



thereof, and adjustable means for supporting the compactor when so installed for compacting operation.

3,753,401

SUPPORTING HOUSING ASSEMBLY FOR A PRINTING MACHINE

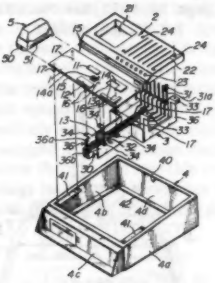
Kenichi Miyazaki, Kokubunji-shi, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,191

Claims priority, application Japan, Dec. 28, 1970, 45/132377

Int. Cl. B41l 35/10

U.S. Cl. 105—45 10 Claims



A manually operated printing machine includes a printing bed plate mounted on a housing extending over the front portion of the open top of the housing, and supporting the carrier of a printing unit which is located in the housing. A cover for the setting rack bars of the numbering unit, closes the rear portion of the open top of the housing, and is also secured to the carrier of the printing unit so that it is easy to accurately assemble the machine.

3,753,402

EXPLOSIVE AND/NAND LOGIC ELEMENT

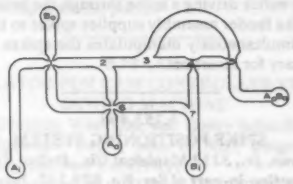
Fred L. Menz, and Michael R. Osburn, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 20, 1971, Ser. No. 181,994

Int. Cl. F42d 1/04; C06c 5/04

U.S. Cl. 102—22 2 Claims

An explosive controlled rectifier, an explosive AND/NAND logic element and a three-input-seven-output explosive logic element. The three-input-seven-output explosive logic element comprises four explosive AND/NAND logic elements.



Each explosive AND/NAND logic element has two inputs and three outputs and includes one explosive controlled rectifier.

3,753,403

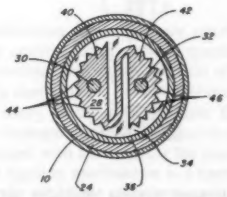
STATIC DISCHARGE FOR ELECTRO-EXPLOSIVE DEVICES

Vincent J. Menichelli, Panorama City, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 19, 1968, Ser. No. 760,934

Int. Cl. F42b 3/18

U.S. Cl. 102—28 R 3 Claims



A static discharge device for an electro-explosive having a pair of electrical lead wires with a bridge element connected there across and in contact with an explosive charge. The bridge element has saw tooth edges positioned away from the explosive charge to provide multiple selective static breakdown points.

3,753,404

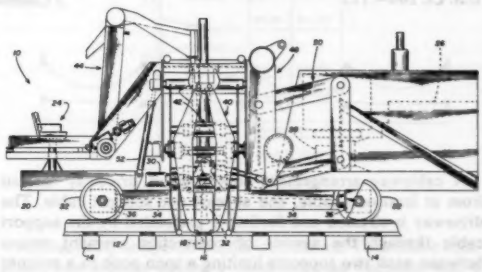
SPIKE DRIVING SYSTEM

John F. Bryan, Jr., 3212 Mapleleaf Cir., Dallas, Tex.

Filed Sept. 21, 1970, Ser. No. 74,016

Int. Cl. E01b 29/26

U.S. Cl. 104—17 R 37 Claims



In a spike driving system, a tie nipper assembly, a spike receiving hole locating and spike driving assembly, and a spike feeder assembly are supported on a vehicle for movement along a track. The tie nipper assembly grips one of the ties of the track and applies an upwardly directed force to the tie.

The spike receiving hole locating and spike driving assembly includes four subassemblies each for automatically locating a spike receiving hole on one side of one of the rails of the track and for thereafter driving a spike through the hole and into the tie. The spike feeder assembly supplies spikes to the subassemblies and simultaneously manipulates the spikes into orientation necessary for insertion.

3,753,405

SPIKE POSITIONING SYSTEM

John F. Bryan, Jr., 3212 Mapleleaf Cir., Dallas, Tex.

Continuation-in-part of Ser. No. 839,142, July 2, 1969, abandoned. This application Sept. 3, 1971, Ser. No. 177,588

Int. Cl. E01b *29/26*

U.S. Cl. 104—17 R **14 Claims**

A spike positioning system includes an electro-optical device for locating spike receiving holes. The locating device is mounted on a spike positioning mechanism that is in turn mounted for movement by hydraulic cylinders. In use, the electro-optical device controls a servo system which operates the hydraulic cylinders. The cylinders in turn move the locating device and the spike positioning mechanism into alignment with a spike receiving hole.

3,753,406

CABLEWAY ARRANGEMENT

Gerhard Muller, Zipfelwiesenstrasse 7, Dietlikon, Switzerland

Filed Oct. 4, 1971, Ser. No. 186,037

Claims priority, application Switzerland, Oct. 13, 1970, 15112/70

Int. Cl. B61b *7/10*

U.S. Cl. 104—112 **3 Claims**

A cableway arrangement comprising a driveway formed from at least one cable, and at least one support cable. The driveway is stressed and further is preloaded by the support cable through the agency of connection element means between each two supports limiting a span zone in a manner producing a negative sag when the driveway is not subjected to the load of the payload. The preloading is such that the payload guided along the driveway, and against the action of the preloading of the driveway produced by the negative sag, follows a direction of travel which approximates a straight line.

3,753,407

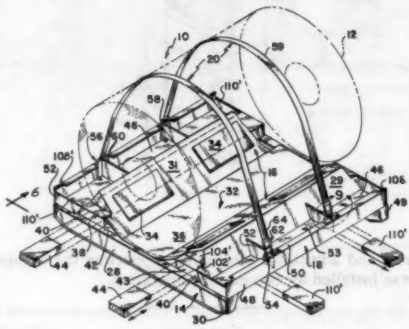
CONVERTIBLE SHIPPING PALLET

Arne B. Tilseth, Oakland, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Apr. 5, 1972, Ser. No. 241,255

Int. Cl. B65d *19/38*

U.S. Cl. 108—53 **20 Claims**



Improved reuseable and convertible shipping pallet of cradle-like design having truss-like reinforcing elements and special attachments whereby the pallet can be used to ship either flat or annular shaped products with equal facility and can be handled equally well by various types of pallet handling equipment such as lift trucks, cranes, etc.

3,753,408

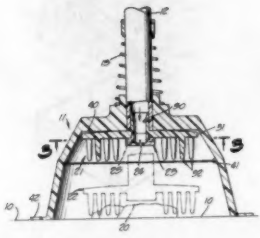
HYDRO-DISINTEGRATOR

Neil J. Zimmerman, 3339 Brookside Drive, Malibu, Calif.

Filed Sept. 16, 1971, Ser. No. 181,071

Int. Cl. A01c *23/02*

U.S. Cl. 111—7.1 **7 Claims**



A hydro-disintegrator useful for disposing of animal droppings in lawns utilizing a stream of water and fragmenting means. The device breaks up the droppings and causes them to be dispersed, absorbed or dissolved into the lawn. The stream of water may be supplied by an ordinary garden hose and means for adding a deodorant, detergent, or the like to the water stream are also disclosed.

3,753,409

METHOD AND APPARATUS FOR SUBSOIL IRRIGATION

Thomas J. Frazier, 2680 Ashford Rd. N.E., Atlanta, Ga.

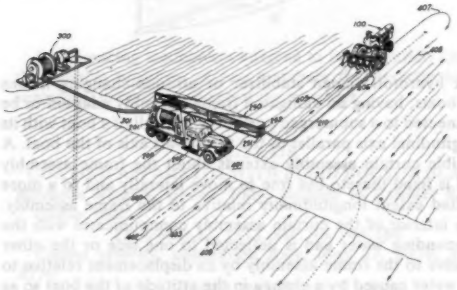
Filed July 2, 1971, Ser. No. 159,223

Int. Cl. A01c *23/02*

U.S. Cl. 111—6 **11 Claims**

A method and apparatus for subsoil application of fluid soil conditioning medium, such as water, for use in subsoil irrigation. An application of fluid soil conditioning medium is applied to the subsoil of an area by traversing the area with a translatable fluid application means in a plurality of alternate

paths of movement parallel arranged relative to each other, with each alternate path of movement being located adjacent to a preceding path of movement, whereby the plurality of paths of movement are collectively operable to completely cover a predetermined area in which a subsoil application of fluid soil conditioning medium is to be made. The fluid medium to be applied is delivered from a stationary supply source to the translatable application means during the traversing operation and is ejected through a plurality of openings made in the soil during the traversing movement, whereby the fluid can be delivered or ejected in the subsoil of the area being traversed. The system of subsoil irrigation or application of a fluid soil conditioning medium includes a stationary supply source, such as a well, with the well being operatively connected through reelable conduit means to an intermediate reel means supported on a translatable vehicle means and with the



conduit means including an additional conduit portion operatively connected to the translatable fluid application means, with the translatable fluid application means including a plurality of horizontally spaced soil splitting shank means for making openings in the soil of the area being traversed and including pressure pumping means for applying the fluid delivered thereto through the openings in the soil to the subsoil of the area. The translatable vehicle means containing the reel means and the translatable vehicle means containing the soil splitting shank means and fluid applying means are controlled and operatively associated with each other whereby the fluid can be pumped in a continuous manner from the stationary supply source through the reelable conduit means and through the openings in the soil during the traversing operation of the area with the vehicle containing soil splitting shank means.

3,753,410

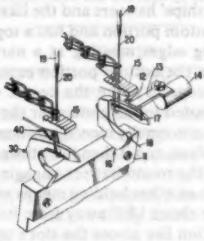
SINGLE THREAD CHAINSTITCH FITTINGS FOR TWO THREAD CHAINSTITCH SEWING MACHINE

Stanley Kostenowczyk, Cranford, N.J., assignor to The Singer Company, New York, N.Y.

Filed May 12, 1972, Ser. No. 252,756

Int. Cl. D05b *1/06*

U.S. Cl. 112—199 **3 Claims**



A looper and a cooperating thread loop positioner for forming single thread chainstitches which may be applied to the looper carrier and work feed dog respectively of a sewing machine adjusted to operate in the production of a two thread chainstitch seam without requiring any change in the timing of any of the sewing machine parts.

3,753,411

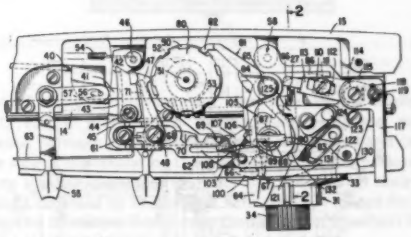
REGULATOR FOR CAM CONTROLLED FEED IN SEWING MACHINE

Richard P. Graham, Westfield, and Henry Schaeffern, Somerville, Bridgewater Twsp., both of N.J., assignors to The Singer Company, New York, N.Y.

Filed June 30, 1972, Ser. No. 267,773

Int. Cl. D05b *3/04*

U.S. Cl. 112—210 **7 Claims**



A control mechanism for selectively rendering effective a manual or a cam control for the sewing machine work feeding mechanism. Simultaneously with selection of cam control for the work feeding mechanism, provision is made for rendering ineffective the heavy spring which biases the work feeding mechanism in a forward direction of feed during manual control. Also associated with the selector for manual or cam control of the work feeding mechanism is a cam follower throwout device whereby exchange of pattern cams is facilitated.

3,753,412

SELECTIVELY HARDENED NEEDLES

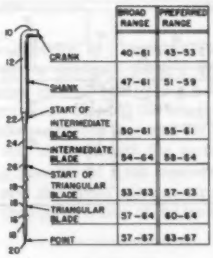
Richard W. Shepard, Torrington; William A. Ross, Harwinton; Samuel Audia, Torrington, and Gary W. Holmes, Winsted, all of Conn., assignors to The Torrington Company, Torrington, Conn.

Continuation of Ser. No. 44,709, June 9, 1970, abandoned.

This application Dec. 2, 1971, Ser. No. 204,337

Int. Cl. D05b *85/00*

U.S. Cl. 112—222 **5 Claims**



	BROAD RANGE	PREFERRED RANGE
CRANK	40–61	43–53
SHANK	47–61	51–59
START OF INTERMEDIATE BLADE	50–61	55–61
INTERMEDIATE BLADE	54–64	58–64
START OF TRIANGULAR BLADE	53–63	57–63
TRIANGULAR BLADE	57–64	60–64
POINT	57–67	63–67

A selectively tempered needle is disclosed. The needle comprises one section having a predetermined hardness and a second section having a different predetermined hardness. Needles of several different sections, each having different hardnesses, may be formed.

The needles are made by applying different amounts of heat to different portions of the needle. The heat may be applied electromagnetically.

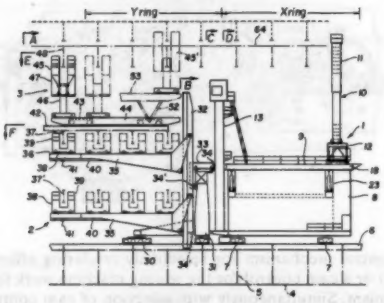
An automatic system feeds each needle to a heating area where the needle is selectively tempered and straightened. The selectively heated needle is simulataneously expelled from the heating area and cooled.

3,753,413

HULL CONSTRUCTION METHOD EMPLOYING HULL CONSTRUCTION UNITS AND A FACILITY THEREFOR

Yoshio Ichikawa, Tokyo; Sadao Kenko, and Katsumi Matsuhiro, both of Hiroshima, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 22, 1971, Ser. No. 155,593
Int. Cl. B63b *3/00*
U.S. Cl. 114—65 6 Claims



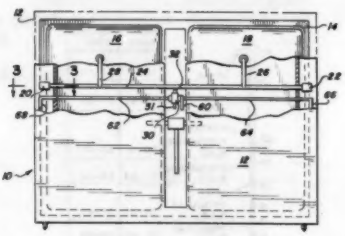
A hull construction method comprises three work units mounting the welding and tack welding machines and other machines and equipment for facilitating the hull construction so that the hull construction works may be concentrated.

3,753,414

AIR MANIFOLD SYSTEM FOR INFLATABLE BULKHEADS

Samuel H. Enochian, Thornton, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Sept. 23, 1971, Ser. No. 183,017
Int. Cl. B63b *25/24*
U.S. Cl. 114—75 5 Claims



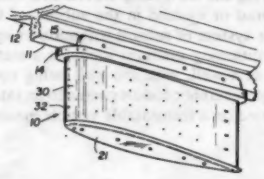
An improved system for selective inflation and deflation of the inflatable envelope means, of an air-pressure type bulkhead system using an inflatable envelope positioned between the spaced panels, is provided by manifolding multiple, normally closed inlet valves at selected locations with the envelope means and providing a single deflation valve that is selectively operable from multiple selected locations. In one form of construction, the single deflation valve is combined with an inlet valve.

3,753,415

HYDROFOIL-SHAPED STABILIZING OR ATTITUDE-AFFECTING MEANS FOR BOATS

Samuel G. Burtis, Sherman Point Rd., P.O. Box 367, Camden, Maine

Filed Nov. 30, 1971, Ser. No. 203,341
Int. Cl. B63b *39/06*
U.S. Cl. 114—126 8 Claims



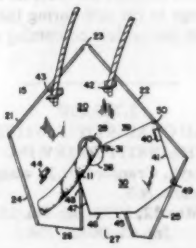
A hydrofoil-shaped stabilizer or attitude-changing means for boats, having an elongated frame assembly adapted to be connected to a submerged portion of the hull of a boat with its longitudinal axis parallel to the fore-to-aft axis of the boat. A flexible curtain assembly extends about the frame assembly and is fixed thereto but free to move laterally and to a more limited extent longitudinally relative to the frame assembly. The interior of the curtain assembly communicates with the surrounding water and is deflected to one side or the other relative to the frame assembly by its displacement relative to the water caused by a change in the attitude of the boat so as to form a hydrofoil having a camber for generating forces to oppose the change in attitude to one side or the other when the boat is underway.

3,753,416

RAT GUARD

Bernard F. Haglund, Hayward, and Robert M. Salvarezza, Hillsborough, both of Calif., assignors to Coast Marine & Industrial Supply Inc., San Francisco, Calif.

Filed Sept. 24, 1971, Ser. No. 183,372
Int. Cl. B63b *21/12*
U.S. Cl. 114—221 R 11 Claims



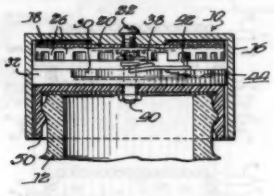
A rat guard for ships' hawsers and the like. A polygonal barrier plate has a bottom portion and has a top portion with two steeply converging edges meeting at a narrow vertex at the very top. A slot in the bottom portion extends up to a round hawser-engaging edge at about the center of gravity. A self-closing door is pivoted to the plate near the upper end of said slot. It is urged to a normally closed position by its weight and its relation to its pivot, and it then lies athwart the slot, with an edge mating with the round hawser-engaging edge to encircle the hawser. A stop or other holding means secured to the plate can hold the door about 180° away from its said normal position, where a portion lies across the slot's upper end so that it will be engaged by a hawser that has entered the slot and thereby caused to swing around its pivot to enclose the hawser between itself and the plate.

3,753,417

SEQUENCE INDICATING MECHANISM

Louis C. Garby, 3890 Armer Dr., Boulder, Colo.

Filed June 25, 1970, Ser. No. 49,824
Int. Cl. G09f 9/00
U.S. Cl. 116—121 6 Claims



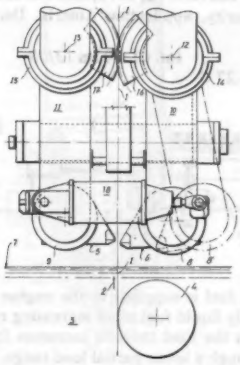
A sequencing mechanism adapted to incrementally change the relative positions of two members that is activated by reciprocal movement of one of the members.

3,753,418

COATING APPARATUS WITH FLUID DOCTOR BLADE

Riccardo Roncan, Genoa, Italy, assignor to Italsider S.p.A., Genoa, Italy

Filed May 17, 1971, Ser. No. 144,186
Claims priority, application Italy, May 27, 1970, 12711 A/70
Int. Cl. B65c 11/06
U.S. Cl. 118—63 6 Claims



The invention relates to an improved device suitable to adjust continuously the zinc coating on a steel sheet or the like by means of a pair of substantially horizontal headers arranged just above the bath surface on both sides of said metal strip, said headers being provided each with a slotted elongated nozzle consisting of two lips capable of projecting a fluid blade of varying configuration onto the surface of said metal strip.

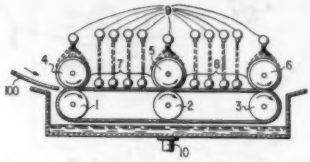
3,753,419

ELECTROPHOTOGRAPHIC LIQUID DEVELOPING APPARATUS

Osamu Fukushima, and Masamichi Sato, both of Asaka, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-Shi Kanagawa, Japan

Filed June 22, 1971, Ser. No. 155,510
Claims priority, application Japan, June 22, 1970, 45/54208
Int. Cl. G03g 13/00
U.S. Cl. 118—637 20 Claims

An electrophotographic developing apparatus employing a liquid developer for developing an electrostatic latent image on an insulating sheet, the apparatus comprising (1) at least two pairs of nip rollers, each pair comprising a first roller disposed on one side of the insulating sheet and a second roller disposed adjacent the first roller and on the opposite side of the insulating sheet where the rollers nip and transport the insulating sheet and where successive pairs of rollers are disposed along the direction of movement of the sheet, (2) at least one pair of endless belts suspended between selected nip rollers at the end portions thereof, the selected rollers being



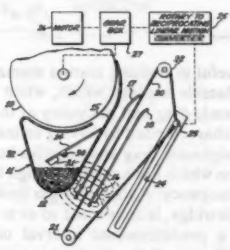
disposed along the direction of movement of the insulating sheet, (3) a plurality of development electrode rollers disposed between each adjacent pair of first rollers and on the same side of the insulating sheet as each of the first rollers and having smaller diameters than the nip rollers with their end portions disposed on the endless belts, and (4) means for supplying the developer liquid onto the surface of the sheet bearing the electrostatic latent image.

3,753,420

MAGNETIC BRUSH DEVELOPER SYSTEM

Gerald Post, Kew Gardens, and Charles M. Buchholtz, New York, both of N.Y., assignors to Ing. C. Olivetti & Co., S.p.A., Ivrea, Italy

Filed Aug. 11, 1971, Ser. No. 170,858
Int. Cl. G03g 13/00
U.S. Cl. 118—637 10 Claims



Apparatus for applying dry toner to a surface bearing an electrostatic image is disclosed using a mixture of magnetic particles and toner in a trough having a wall extending upwardly and progressively close to the image surface. A magnet is moved upwardly parallel to that wall for carrying a quantity of the mixture into contact with the surface. A gate in the trough permits a quantity of fresh mixture to pass upwardly along the wall and the spent mixture to move downwardly over the gate to the opposite side of the trough.

3,753,421

METHOD AND APPARATUS FOR CONTROLLING AN ANIMAL

Richard M. Peck, 3113 Club Dr., Allentown, Pa.

Filed Dec. 20, 1971, Ser. No. 209,928
Int. Cl. A01k 15/00
U.S. Cl. 119—29 13 Claims

Method and apparatus for controlling a domestic animal to prevent it from moving into or out of a predetermined area wherein a signal emitting wire is placed to surround the area,

and a low-powered, high voltage receiver circuit is mounted to the animal such as through a collar for receiving the signal

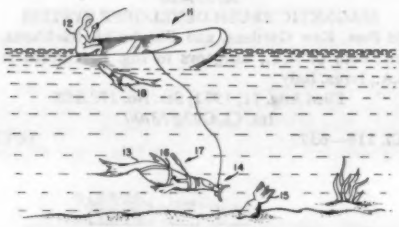
from the wire and producing a physical effect on the animal as it approaches the wire.

3,753,422

MARINE MAMMAL AUTOMATIC FLOAT LOCATING AND RESTRAINING DEVICE AND METHOD

Ronald L. Seiple, Kailua, Hawaii, assignor to the United States of America as represented by the Secretary of the Navy

Filed June 26, 1972, Ser. No. 266,086
Int. Cl. A01k *15/00*
U.S. Cl. 119—29 11 Claims



A device useful in training marine mammals is disclosed as having an inflatable bladder which, when inflated, increases the hydrodynamic drag and buoyancy of the marine mammal. The device is characterized by having an inactive position having low hydrodynamic drag and negative buoyancy and an activated position which has a relatively high hydrodynamic drag and positive buoyancy. A source of gas under pressure, for example a gas cartridge, is connected so as to inflate the bladder means upon a predetermined interval of exposure to salt water. The inflation of the bladder is controlled by a water soluble washer which restrains a spring loaded plunger from penetrating the gas filled cartridge.

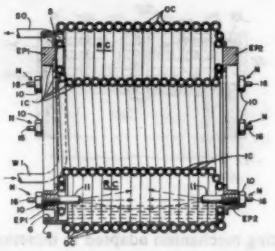
3,753,423

CHEMICAL REACTOR BOILER ASSEMBLY

Donald R. Olson, and Daniel H. Kiely, both of State College, Pa., assignors to the United States of America as represented by the Secretary of the Navy

Filed June 22, 1972, Ser. No. 265,118
Int. Cl. F22b *37/10*
U.S. Cl. 122—248 11 Claims

A compact boiler unit of the type used for torpedo propulsion for transferring chemical reaction heat to a working medium. The reaction takes place in an annular zone defined between two concentric cylindrical wall elements and two annular end plate elements secured thereto, the cylindrical wall elements formed of continuous laterally bonded turns of a helical tubular conduit and the end plate elements provided with circumferentially spaced opposed reactant nozzle units for injecting reactant fluid into the annular zone to create maximum turbulent mixing therein. The working medium is moved in a helical path first through the inner helical conduit to generate vapor and then through the outer helical conduit to superheat the vapor. Centrifugal action during movement of the medium through the inner helical path breaks up and removes vapor bubbles to enhance heat transfer and reduce



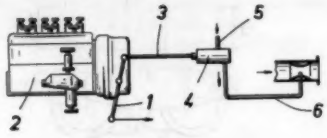
overheating which could cause conduit burnout. Maximum centrifugal force is advantageously developed along the outer surface of the inner conduit wall where best heat transfer potential and maximum burnout danger exist.

3,753,424

METHOD AND APPAPATUS FOR SUPPLYING GASEOUS AND LIQUID FUELS TO A DUAL-FUEL ENGINE

Dieter Haidvogel, Vienna, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Nov. 12, 1971, Ser. No. 198,166
Claims priority, application Austria, Dec. 22, 1970, A 11 518/70
Int. Cl. F02m *13/08*
U.S. Cl. 123—27 G 5 Claims



Only liquid fuel is supplied to the engine under a no-load condition. Only liquid fuel at an increasing rate is supplied to said engine as the load thereon increases from said no-load condition through a lower partial load range. Liquid and gaseous fuels are supplied to said engine in a higher partial load range and under full load. The proportion of said gaseous fuel relative to said liquid fuel is increased during an increase of the load on said engine above said lower partial load range to about three-fourths of the full load on the engine.

3,753,425

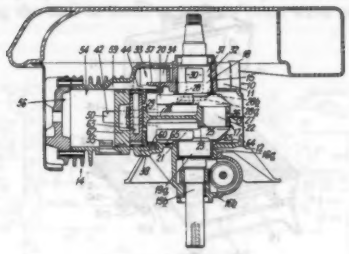
TWO STROKE INTERNAL COMBUSTION ENGINES

Bernard Hooper, Wordsley near Stourbridge , England, assignor to John Edward Favill, Sedgley, England, a part interest

Filed Sept. 14, 1971, Ser. No. 176,404
Claims priority, application Great Britain, Sept. 19, 1970, 44,749/70
Int. Cl. F02b *33/04*
U.S. Cl. 123—73 PP 5 Claims

The specification discloses a two-stroke engine employing crankcase compression wherein a charge of lubricant and fuel passes through a first transfer passage in a stationary part of the engine. The transfer passages for the or each cylinder communicate at one only of the journals of the crankshaft and the second transfer passage is branched and leads to inlet parts

located so as to give loop scavenging of the cylinder. The rotary axis of the crankshaft may be vertical and said journal the



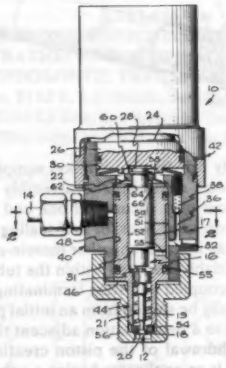
upper journal which is thus well lubricated since at least the majority of the cylinder charge is exposed to the journal bearing.

3,753,426

BALANCED PRESSURE FUEL VALVE

Martin C. Lilley, San Ramon, Calif., assignor to Physics International, San Leandro, Calif.

Filed Apr. 21, 1971, Ser. No. 136,097
Int. Cl. F02b *15/00*
U.S. Cl. 123—139 E 14 Claims



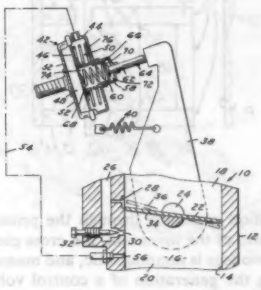
A hydraulic fuel valve assembly which equalizes the pressure of fluid at the hydraulic cylinder during the closed-valve condition with the pressure of fuel at the nozzle region, to thereby assure that the hydraulic cylinder is always full and to minimize variations in the force that must be applied by the hydraulic piston when fuel pressure varies. The valve assembly includes a passageway connecting the fuel supply line to the nozzle region of the valve, and a channel leading to the hydraulic cylinder to supply pressurized fuel to it. A check valve is located along the channel to prevent the flow of fluid out of the hydraulic cylinder when it is highly pressurized during valve opening. In a valve wherein a fluid other than fuel is employed in the hydraulic cylinder, a bellows or sealed piston is installed in the channel between the check valve and the fuel line to prevent mixing of the hydraulic fluid and the fuel. The valve assembly includes a valve body that forms the hydraulic cylinder, and a separate valve insert that contains a valve plunger and an insert housing that defines the valve seat and that limits plunger movement away from the seat, to thereby enable testing and adjustment prior to complete valve assembly.

3,753,427

ENGINE ANTI-DIESEL AND DECELERATION CONTROL

Raymond J. Cedar, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 29, 1971, Ser. No. 202,913
Int. Cl. F02m *19/12, 1/14;* F02d *33/00*
U.S. Cl. 123—198 DB 2 Claims



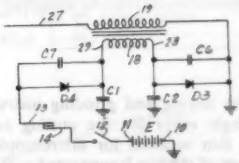
The throttle valve of a downdraft type carburetor is controlled in its movement by a servo in turn controlled by manifold vacuum changes; servo springs initially move the throttle valve to a closed position for engine anti-dieseling; engine running vacuum moves the servo diaphragm to open the throttle valve to an idle speed position; and, engine decelerations effect a delayed throttle valve closing to reduce emissions.

3,753,428

IGNITION SYSTEM

John P. Phillips, 625 Esther St., Michigan City, Ind.

Filed Mar. 30, 1971, Ser. No. 129,527
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E 4 Claims



An improved ignition system for internal combustion engines having diode rectifiers and condensers in an ignition system connected in a fashion so as to provide an improved system thereby allowing increased gas mileage and hotter sparks to be obtained.

3,753,429

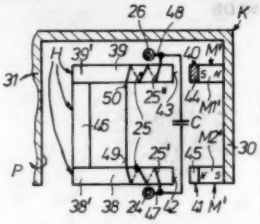
INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

Gerhard Imhof, Rothenbach/P, and Peter Schmaldienst, Nurnberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 12, 1971, Ser. No. 161,766
Claims priority, application Germany, July 28, 1970, P 20 37 336.8
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E 33 Claims

A plurality of permanent magnets forming a cylinder is rotated about a common axis, inducing voltages in two windings on respective legs of a magnet yoke positioned within the cylinder, the windings being so wound that their

voltage normally cancel. Means are provided within the cylinder so as to upset, once every rotation of the plurality of magnets, the balance between the voltages in the two windings so that there is produced a control voltage that is conducted to the control electrode of a thyristor that controls the discharging of an ignition capacitor through the primary of a spark coil. In one form of the invention, the cross piece connecting together the two legs is nonmagnetic, and means are provided for preventing the generation of a control voltage when the engine rotates in the wrong direction.



3,753,430

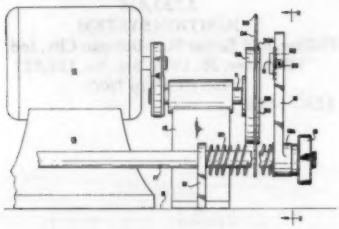
SAW-GRINDER COMBINATION FOR THIN ROCK SECTION MACHINES

Egil Oas, Rt. 2, Box 133, Springfield, Oreg.

Filed June 14, 1972, Ser. No. 262,695

Int. Cl. B24d 7/18

U.S. Cl. 125—14 **8 Claims**



A combination sawing and grinding instrumentality supported on a single arbor for the cutting and grinding of specimens into thin sections for microscopic analysis. An abrasive periphery of the saw is supported against dishing during cutting operations by cooperating plate and grinder means oppositely disposed on the blade. Importantly, the offset grinder means additionally serves to abrade the specimen to the required 30 micron thickness all in one operation without the use of a separate machine and without re-mounting of the slide mounted specimen.

3,753,431

GAS SUPPLY UNIT FOR PORTABLE GRILL

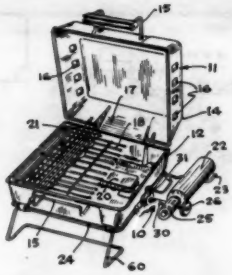
Walter Koziol, Russell, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed May 8, 1972, Ser. No. 251,108

Int. Cl. F24c 5/20

U.S. Cl. 126—38 **10 Claims**

A gas supply unit for a portable gas grill which is easily assembled and disassembled to a standard portable gas supply tank. A base member for the grill has a compartment into which the gas inlet tube for the burner element and the gas outlet tube from the gas supply control unit are interfitted in an easily removable manner. In preferred embodiment, the gas outlet tube has a butterfly type bolt for threadable engagement with the compartment to hold it in place inside the inlet tube and the compartment. A support arm which is pivotally attached to a support rack for the base holds the gas supply tank at a determined level. The gas outlet tube with the gas control, the supporting rack and the gas tank all are adapted to be carried within the confines of the base and cover for the grill.



3,753,432

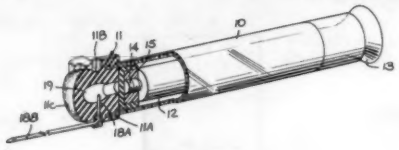
HYPODERMIC SYRINGE FOR BLOOD TESTS

Luis A. Guerra, New York, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,775

Int. Cl. A61b 5/14

U.S. Cl. 128—2 F **5 Claims**



A syringe assembly for drawing a blood sample into a test tube suitable for blood analysis. The assembly includes an open-ended cylindrical tube secured at one end to a closure provided with a constricted neck of self-sealing elastomeric material and having an internal chamber therein communicating with the tube. Slidably disposed within the tube is a piston which is detachably coupled to a stem terminating in a handle whereby the piston may be shifted from an initial position sealing off said chamber to a final position adjacent the other end of the tube, the withdrawal of the piston creating a suction force. Also provided is an applicator having a yoke adapted to embrace the neck of the closure, and an L-shaped double-pointed needle secured at its junction to the yoke, the lateral arm of the needle penetrating the neck to enter the chamber therein, whereby blood flowing through the longitudinal arm of the needle which is injected in a vein of a patient is conducted into the neck chamber and from there into the tube to a level determined by the piston position. The piston serves as a stopper when the stem is detached therefrom and may be later removed by a puncturing tool which vents the stopper to facilitate its extraction from the tube.

3,753,433

ELECTROENCEPHALOPHONE AND FEEDBACK SYSTEM

Frank Bakerich, and Robert T. Scully, both of Mendocino, Calif., assignors to Aquarius Electronics, Mendocino, Calif.

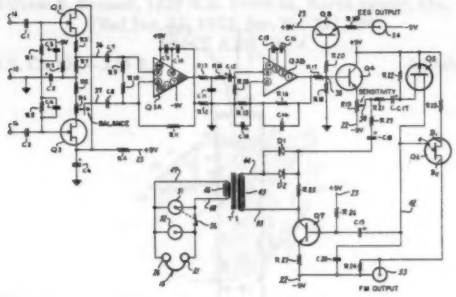
Filed Jan. 18, 1971, Ser. No. 107,215

Int. Cl. A61b 5/05

U.S. Cl. 128—2.1 B **19 Claims**

An electroencephalophone which is battery operated and completely self-contained in a headset to be worn by the user and having a plurality of scalp electrodes carried on flexible

leads permitting placement of the electrodes on the user's head when the headset is mounted thereon and having an electronic circuit and transducer for converting brain wave signals picked up by the electrodes into recognizable audio tones enabling the user to listen to his own brain wave generation.



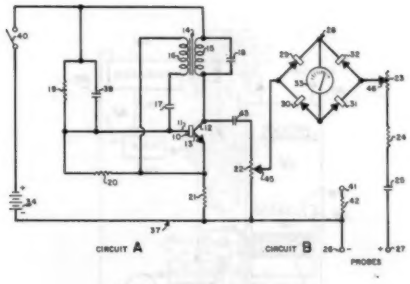
The scalp electrode signals are amplified and chopped by an audible oscillator signal the frequency of which is controlled by the scalp electrode signals. The resulting combined amplitude and frequency modulation of the audible generator tone provides a distinctive sound for brain wave recognition.

3,753,434

ELECTRONIC DEVICE FOR MEASURING PENETRATION OF TOOTH ROOT CANAL AND ENDODONTIC THERAPY METHOD

James L. Pike, 2115 E. Lavendale, San Antonio, Tex., and Polk W. Cash, 9714 La Rue, San Antonio, Tex.

Filed Aug. 23, 1971, Ser. No. 173,775
Int. Cl. A61b 5/05
U.S. Cl. 128—2.1 Z 9 Claims



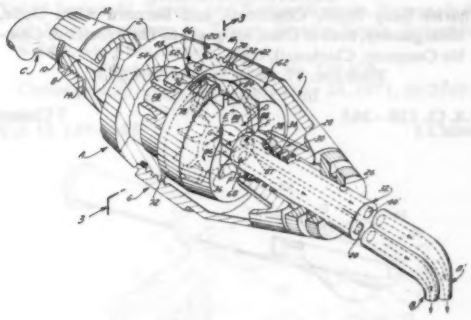
An electronic device for accurately determining the point of penetration of root canal and contacting of peridontal tissue. The device is battery powered fed through a tickle oscillator conductively connected to a probe diode bridge meter circuit utilized for accurately measuring conductivity between the root canal area and body tissue of the mouth. Potentiometers are provided for adjusting and balancing circuits to insure accuracy of measurements. The method and utilization includes not only measurements of penetration of root canal to peridontal tissue but also provides determination of effectiveness of seal of silver points in restoration as well as disclosing cracked teeth and secondary canals.

3,753,435

MULTI-JET MASSAGER

William Blasnik, 16 Donnybrook Dr., Demarest, N.J.

Filed Nov. 22, 1971, Ser. No. 201,017
Int. Cl. A61h 9/00
U.S. Cl. 128—66 19 Claims



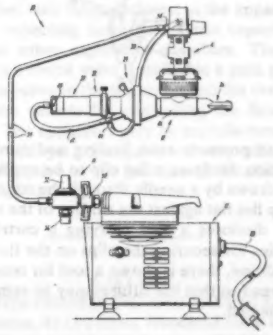
A multi-jet massager particularly well adapted for treatment of the gums, in which a plurality of jet nozzles are provided and in which an impeller-driven rotary valve is utilized to direct fluid sequentially to the several nozzles, thereby to produce successive jet action from the nozzles. The arrangement is such that all of the fluid flowing through the device is utilized in jet-formation, and at the same time all of the fluid contributes to the control action which produces those jets. The device is designed so that it will be self-starting no matter in what position it may stop.

3,753,436

AUTOMATIC RESPIRATOR

Forrest M. Bird, Mark 7, Palm Springs, and Henry L. Pohndorf, 1227 Brewster Street, El Cerrito, both of Calif.

Continuation-in-part of Ser. No. 26,023, April 6, 1970, abandoned. This application Feb. 16, 1971, Ser. No. 115,225
Int. Cl. A61m 16/00
U.S. Cl. 128—145.8 22 Claims



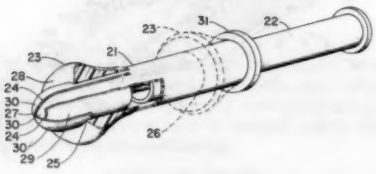
Respiratory apparatus for controlling the flow of gases to a patient's airway. In one embodiment a light weight, portable, reliable and ethical respirator apparatus adapted for home use or the like is provided. A servo flow control affords convenient and accurate adjustment of sensitivity pressures and peak inspiratory pressures. The elements are constructed in a manner facilitating disassembly, sterilization, and assembly by a relatively unskilled person. The respirator is adapted to freely operate under adverse conditions without being affected by

an accumulation of moisture. In another embodiment the respirator apparatus includes means facilitating accurate manual adjustment of the peak inspiratory pressure limit in a manner which does not alter the pre-set sensitivity level.

3,753,437
EXPANDABLE TAMPON INSERTER HAVING A CONSTRAINING RING

Charles Reay Hood, Cincinnati, and Bernard Allen Dulle, Montgomery, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Dec. 17, 1971, Ser. No. 209,273
Int. Cl. A61m *31/00*
U.S. Cl. 128—263 **7 Claims**

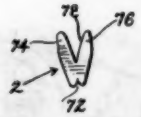


A tampon inserter having one end expandable when subjected to pressure on its interior surface and an externally mounted, moveable member which in a first position constrains such expansion and in a second position allows the one end of the inserter to expand or move outwardly. The expansion relieves the force between the interior wall of the inserter and exterior surface of the tampon, thus lowering the frictional force between the inserter wall and the tampon.

3,753,438
SUTURE CLIP

Ernest C. Wood, 2461 Ivanhoe Dr., Los Angeles, and Peter B. Samuels, 5363 Balboa Blvd., Encino, both of Calif.

Continuation of Ser. No. 817,496, April 18, 1969, abandoned. This application Apr. 25, 1972, Ser. No. 247,422
Int. Cl. A61b *17/04*
U.S. Cl. 128—335 **2 Claims**



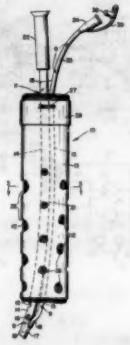
In order to promote even healing and minimize scarring, this application discloses a flat clip to be applied to each end of a thread drawn by a needle through the edges of the wound until the clip lies flat against the surface of the skin. The application also discloses a tool carrying a cartridge holding a supply of clips for securing the clips on the thread and severing it. In addition, there is shown a tool for removing the clips from the thread so that the sutures may be removed when the wound has healed.

3,753,439
GENERAL PURPOSE SURGICAL DRAIN

Antonio Brugarolas, and Elias G. Elias, both of Buffalo, N.Y., assignors to Elias & Brugarolas, Buffalo, N.Y.

Filed Aug. 24, 1971, Ser. No. 174,466
Int. Cl. A61m *27/00*
U.S. Cl. 128—350 R **6 Claims**

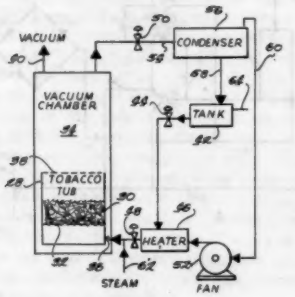
A surgical drain for operative and post operative usage providing a core comprising a pliant drainage conduit having through wall passages throughout its lenth from its distal end to a point inset from its proximal end and a co-extensive pliant irrigation conduit open at its ends, a padding layer of soft, non-friable absorbent material surrounding said core from its distal end to a point opposite the proximal end passages of the drainage conduit, a soft rubber or like sheathing surrounding the padding layer from end-to-end and having through wall passages throughout its length from its distal end to a point opposite the proximal end passages of the drainage conduit, and a securing suture extending through the proximal ends of the padding layer and sheath and encircling the core to retain the parts assembled. Fittings are provided at the proximal ends of the respective conduits adapting them respectively for connection to a suction line and to an irrigation line and the fitting of the irrigation conduit includes a normally closed plug valve selectively opened to provide irrigation when needed.



3,753,440
TOBACCO EXPANSION PROCESS

James Gilbert Ashburn, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

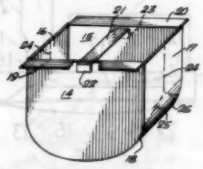
Filed Mar. 7, 1972, Ser. No. 232,541
Int. Cl. A24b *03/18*
U.S. Cl. 131—140 P **6 Claims**



The filling capacity of tobacco is increased by establishing a body of water-moistened tobacco in a bed in a hermetically sealed chamber. A partial vacuum is applied to the bed to remove occluded air and the tobacco is contacted with vapors of a compound having an atmospheric pressure boiling point between about −10 and +80° C., the temperature of the tobacco during contact being maintained at or below the boiling point of the compound at the prevailing pressure, whereby the tobacco is impregnated with the compound in the liquid state by condensation. The impregnated tobacco is then equilibrated, and a drying gas at a temperature between about 40° and 80° C. is passed through the bed to remove a portion

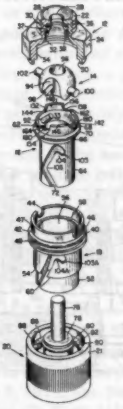
of the moisture and the impregnating compound as vapors. A hot gas at a temperature above about 90° C. and more than about 18° C. above the boiling point of the compound is then passed through the tobacco to expand it.

3,753,441
DISPOSABLE ASHTRAY LINER
William B. Bennett, 1525 N.E. 149th St., North Miami, Fla.
Filed Jan. 31, 1972, Ser. No. 221,904
Int. Cl. A24f *19/14*
U.S. Cl. 131—235 R 4 Claims



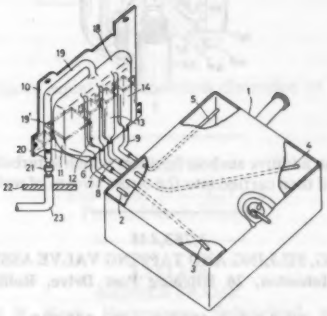
A disposable ashtray liner for replaceable use in an ashtray receptacle is fabricated of thin, bendable, sheet material so as to be collapsable and sealable at its upper end upon completion of its use for encapsulating cigarette butts, ashes, etc, for unitary disposal therewith. The sheet material is preferably of light-gauge sheet aluminum formed into an open-topped, cup-like ashtray liner having opposed end walls and opposed side walls and including an upper end plate secured against the upper periphery of the liner providing an outwardly-extending peripheral flange. The upper end plate has a pair of spaced, parallel, rectangular openings defining therebetween a snuffer strip extending between opposite end walls of the liner.

3,753,442
MONITORING DEVICE AND METHOD
Thomas Tauber, Clifton Heights, Pa., assignor to Technical Development Company, Glenolden, Pa.
Filed Nov. 1, 1971, Ser. No. 194,203
Int. Cl. F16k *37/00*
U.S. Cl. 137—15 10 Claims



A hydraulic device suitable for installation in a vessel wall and having a positively opening and closing valve, respectively, upon the insertion and withdrawal, selectively, of another functional member. Such a member may be a magnetic debris collector, an electric chip detector, a fluid-sampling element, a thermosensitive probe, a drain attachment and any related accessory, selectively. The practice of this hydraulic device precludes the draining of the fluid and reduces the fluid spillage to a minimum when the accessory members are negotiated.

3,753,443
APPARATUS FOR REMOVING FUEL VAPORS FROM A FUEL TANK ON A MOTOR VEHICLE
Yuichi Sorimachi, Toyota, and Kazuo Okamoto, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed May 8, 1972, Ser. No. 250,916
Claims priority, application Japan, May 25, 1971, 46/35691
Int. Cl. F17c *3/00*
U.S. Cl. 137—255 6 Claims

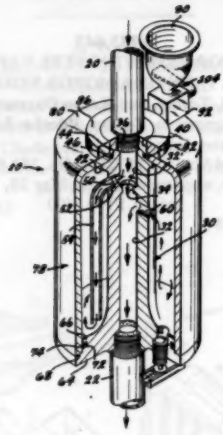


An apparatus for removing fuel vapors from a fuel tank on a motor vehicle, comprising a plurality of upstanding expansion chambers having different volumetric capacities and separated from one another by dividing walls except for the upper end portions thereof in which they communicate with one another through a common chamber. The expansion chambers have at the lower ends thereof openings communicating respectively with the upper corner portions of the fuel tank, and the expansion chamber communicating with the corner of the fuel tank located closest to the apparatus is provided with an especially large volumetric capacity as compared with the other expansion chambers. The apparatus further includes a check valve installed in a path provided for communication between the apparatus and the canister, crank case, etc. of the vehicle for controlling the flow of vapors therebetween. The apparatus may be manufactured as a very compact unit, and yet, is capable of very effective vapor separation irrespective of the position of installation thereof relative to the fuel tank.

3,753,444
DEVICE FOR COMBINING AND MIXING LIQUIDS
Herbert D. Winton, 4115 Picaso, Woodland Hills, Calif.
Filed Sept. 9, 1971, Ser. No. 179,075
Int. Cl. F16k *51/00*
U.S. Cl. 137—268 8 Claims

A device for combining and mixing liquids and particularly for mixing an additive such as fertilizer with water. First and second concentric cylindrical chambers are provided with a water inlet to and an outlet from the inner chambers. A restricted venturi throat is provided at the inlet to the inner chamber so as to develop a pressure differential across it. A connection is provided from the inlet side of the restricted throat into the second chamber and from the second chamber

back to the inner chamber beyond the restricted throat. A flow of water is enforced through the second chamber which



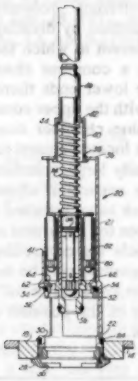
contains the additive such as fertilizer which is turbulated, entrained, and then carried into the outlet stream of water.

3,753,445

WASHING, FILLING AND TAPPING VALVE ASSEMBLY

Mack S. Johnston, 26 Hitching Post Drive, Rolling Hills, Calif.

Filed Feb. 2, 1972, Ser. No. 222,910
Int. Cl. F16l *55/10*; B65d *83/14*
U.S. Cl. 137—322 12 Claims



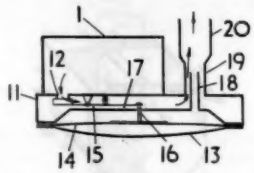
A valve assembly especially suitable for mounting in the bung opening in the side wall of a beer keg, and containing a skeletal tubular housing and a siphon tube which extends into said keg. A valve body is mounted in the tubular housing for movement between a closed position in which it is in closed, sealing engagement with the bung opening, and an open position in which it is spaced from the bung opening to permit cleaning liquid or beer to flow past the valve body and into the keg, said valve body being yieldably biased toward the closed position. Liquid and gas passageways with associated valve means are provided in the valve body, whereby gas under pressure can be admitted into the keg and beer can be withdrawn therefrom when the valve body is in the aforesaid closed position, as by using a tapper attachment.

3,753,446

FLUID PRESSURE REGULATOR

Adrianus Johannes Theodorus Hoogeboom, Harmelen, Netherlands, assignor to William Turner Brunot, London, England

Continuation of Ser. No. 800,629, Feb. 19, 1969, abandoned.
This application Jan. 11, 1971, Ser. No. 105,623
Claims priority, application Great Britain, June 14, 1968, 28,385/68
Int. Cl. F16k *21/00*
U.S. Cl. 137—484-8 5 Claims



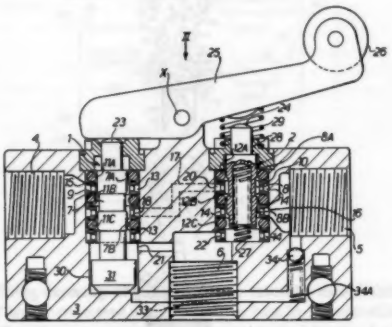
A fluid pressure regulator having a preliminary chamber provided with a biased preliminary inlet valve so that pressure of the fluid in such chamber is substantially reduced from the supply pressure. The preliminary chamber leads a main inlet valve into a main chamber having a discharge pipe. A pressure responsive diaphragm is located in an auxiliary chamber and has a discharge pipe opening into the discharge pipe from the main chamber so that the passage of any fluid along the discharge pipe out of the main chamber causes a suction in the auxiliary chamber which causes the diaphragm to move. The diaphragm carries an operating rod which moves pivotally mounted biased lever to open the main inlet valve and allow more fluid to enter the main chamber from the preliminary chamber.

3,753,447

PNEUMATIC VALVES

John David Davis, 25 The Fairway, Newton Ferrers, and Christopher Lee Atkins, 24 Longfield, Lutton, Cornwood, both of England

Filed Nov. 29, 1971, Ser. No. 202,813
Claims priority, application Great Britain, Nov. 27, 1970, 56,607/70
Int. Cl. F16k *11/10*, *11/14*
U.S. Cl. 137—596 13 Claims



A pneumatic control valve assembly has two valves in a common housing interconnected by a transfer duct. A first valve controls communication between an inlet and the transfer duct while the second valve controls communication between the transfer duct and an outlet. Operation of the second valve, for example by a lever, causes input pressure to be delivered to a point of use — e.g. an actuator. Back pressure is tapped from the outlet and operates an actuator in the

housing which closes the first valve, so that a pressure pulse is delivered. The closure of the first valve ensures that subsequent interruption or failure of the supply pressure has no effect on the state of the valves.

3,753,448

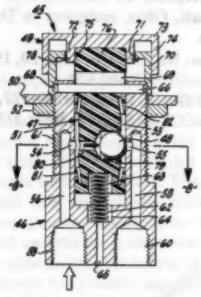
VALVE ASSEMBLY FOR WATER FOUNTAINS AND THE LIKE

Allen C. Wright, Berkeley, Calif., assignor to Haws Drinking Faucet Company, Berkeley, Calif.

Division of Ser. No. 875,873, Nov. 12, 1969, Pat. No. 3,709,254. This application Dec. 7, 1971, Ser. No. 205,688

Int. Cl. F16k *11/14*

U.S. Cl. 137—609 **10 Claims**



A valve assembly for controlling the flow of water to the discharge nozzle of water fountains and the like. The valve assembly is characterized by providing a complete change from fully closed to fully open position with a very small displacement of the movable control component of the valve assembly, and such control component is isolated from unbalanced pressure forces and, therefore, can be displaced with substantially the same mechanical force irrespective of the pressure of the supply water delivered to the fountain. Further, delay or lag can be introduced into the valve assembly so that opening, or closing, thereof will not be initiated until the movable component of the assembly has been displaced through some predetermined distance. The valve assembly includes a casing defining a pressurizable chamber having an inlet passage in continuous communication therewith and an outlet port selectively opened and closed by a generally spherical valve in accordance with whether the movable control component of the assembly is in its open or closed position. The valve tends to be carried into closing engagement with the outlet port by the discharge of water therethrough, and it also tends to be sealingly related to such port because of the pressure differential developed across the valve when it is once in engagement with the port.

3,753,449

TURBINE INLET VALVE STRUCTURE

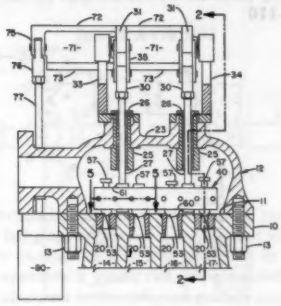
Henry A. Nelson, Latrobe, and William A. Straslicka, Norvelt, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed June 5, 1972, Ser. No. 259,701

Int. Cl. F16k *1/50*

U.S. Cl. 137—630.19 **4 Claims**

Fluid flow control valves arranged in the valve chest of an elastic fluid turbine are formed with stems noncircular in cross section having slidable engagement with noncircular apertures formed in the valve lifting bar whereby the valves are prevented from spinning on their axes. The valve stems are formed with enlargements integrally united with the stems. The bar lifting rods are formed with enlargements integrally united therewith, the rod enlargements being spaced apart axi-



ally a distance equal to the vertical dimension of the lifting bar.

ERRATUM

For Class 137—823 see:
Patent No. 3,753,304

3,753,450

HEDDLE FRAME

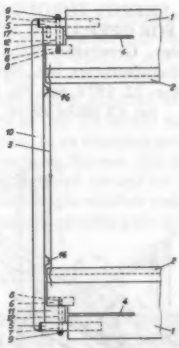
Bernhard R. Koch, Horgenberg, Switzerland, assignor to Grab & Co., Aktiengesellschaft, Horgenberg, Switzerland

Filed May 9, 1972, Ser. No. 251,687

Claims priority, application Switzerland, May 13, 1971, 7099/71

Int. Cl. D03c *9/06*

U.S. Cl. 139—191 **8 Claims**



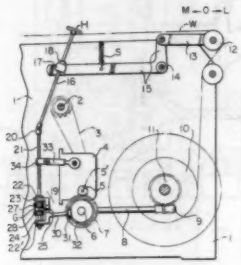
A heddle frame is provided with at least one vertical side support to the ends of which the horizontal frame staves are connected by vertical screw bolts which are in axial alignment with each other and also are disposed parallel to the vertical side support. Upon loosening the screw bolts the side support may be pivoted away from the adjacent ends of the horizontal staves to expose the ends of heddle carrying rods attached to the staves, so that the heddles may easily be slidably attached and removed from the rods.

3,753,451

LET-OFF MOTION IN LOOM

Shinichi Hosono, and Kazuyoshi Kida, both of Ishikawa-ken, Komatsu, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 30, 1970, Ser. No. 23,684
Int. Cl. D03d *49/06*
U.S. Cl. 139—110 **6 Claims**



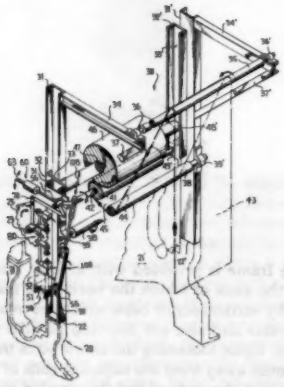
A warp let-off mechanism for a loom having a warp beam driven through a variable speed transmission and a backrest over which the warp runs, the backrest being movable in a direction for increasing and decreasing warp tension and being resiliently urged against warp tension in the tension increasing direction, the variable speed transmission having means for varying the speed thereof. The warp let-off mechanism is comprised of a first adjustment means comprising backrest coupling means coupled between the backrest and the means for varying the speed of the variable speed transmission and responsive to an increase or decrease in tension in the warp as the removal of the warp from the warp beam progresses for adjusting the position of the varying means to increase or decrease, respectively, the speed of the warp beam for reducing or increasing, respectively, the tension. A second adjustment means is coupled to the first adjustment means and is responsive to adjusting movement of the first adjusting means for adjusting the coupling between the coupling means and the varying means to return the backrest to its initial position while maintaining the varying means in its adjusted position.

3,753,452

POTENTIAL-ENERGY TORQUE-GENERATING MECHANISM FOR OPERATING A TAKE-UP ROLL

Donald Dane Zebley, Greenville, S.C., assignor to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed Apr. 22, 1971, Ser. No. 136,477
Int. Cl. D03d *49/20*
U.S. Cl. 139—311 **13 Claims**



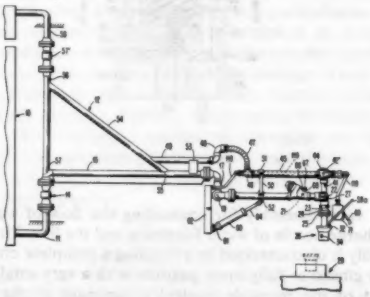
A torque-generating mechanism of the potential-energy type which steadily maintains a selected rotational force within selected limits for winding or unwinding operations. The mechanism comprises a toothed ratchet wheel which turns a drive shaft, a leverage means in the form of a lever arm and leverage weight which provides torque by pivotal movement through a selected arc, a torque arm means that transmits the pivotal movement to the perimeter of the ratchet wheel through a tooth-engaging pawl, a counter-rotation means, and an energy restoration means. The preferred counter-rotation means is a second leverage means which acts in alternating sequence and is disposed in opposed relationship to the first leverage means. When winding textiles, for example, the drive shaft may be connected to a sand roll which provides constant fabric tension at a single leverage weight setting or to the mandrel of a take-up roll which provides decreasing fabric tension at a constant leverage weight setting.

3,753,453

FLUID HANDLING APPARATUS

Michael J. Madden, West Covina, Calif.; Robert L. Murray, Dayton, Ky.; Stephen C. Lemon, and Paul R. Ostand, both of Cincinnati, Ohio, assignors to Dover Corporation, Cincinnati, Ohio

Division of Ser. No. 761,236, Sept. 20, 1968, Pat. No. 3,605,824.
Filed Oct. 1, 1970, Ser. No. 77,361
Int. Cl. B65b *3/18*; B67c *3/34*
U.S. Cl. 141—387 **3 Claims**



This disclosure relates to an apparatus and method whereby liquid is supplied at a container from a supply line only when a vapor seal is formed between the supply line and the container. Flow of liquid is automatically stopped when the liquid in the tank reaches a predetermined level, when the pressure in the tank exceeds a predetermined value, or when the vapor seal is broken. Vapor is removed from the container during filling thereof. When filling ceases or the supply line is no longer vapor sealed to the container, the vapor removal line is automatically blocked to prevent escape of vapors into the atmosphere.

3,753,454

SCREW DRIVER BIT WITH DOUBLE BLADES

Katsuyuki Totsu, No. 4-7, 3-chome, Oshiage, Sumida-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 737,871, June 18, 1968, Pat. No. 3,612,554. This application July 9, 1971, Ser. No. 161,057
Claims priority, application Japan, July 13, 1970, 45/60874
Int. Cl. B25b *15/02*
U.S. Cl. 145—50 E **5 Claims**

A screw suspension driver with substitutable double bits which are inserted into the tip portion of the screw driver

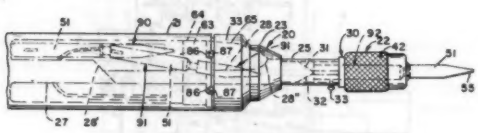
shaft. The double bits have end edges which are recessed to form stepped portions and individual of the bits at its center portion being provided with a projection adapted to be inserted into the guide hole in the screw head.

3,753,455

SELECTIVE CHAMBER SCREWDRIVER

Richard George Butler, Box 391, Gimli Manitoba, Canada

Filed July 16, 1971, Ser. No. 163,334
Int. Cl. B25g *1/08*; B23b *5/34*
U.S. Cl. 145—63 2 Claims



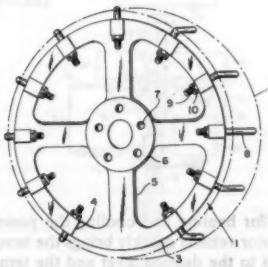
The invention comprises a selective blade screwdriver. The screwdriver has six screwdriver blades of different sizes housed in the handle of the screwdriver. The screwdriver has a hollow stem structure extending from the forward portion of the handle of the screwdriver, providing a hollow passageway which communicates with the handle. The handle is rotatable to align a selected size screwdriver blade with the hollow passageway, whereupon the screwdriver may be tipped with the handle upward and the stem downward which causes the selected blade to slide under gravity out of the handle into the stem. The screwdriver has radially engaging locking structure at the forward end of the stem to lock the selected blade in the stem once it has slid there under gravity for using the blade with the handle as a screwdriver.

3,753,456

TRACTION DEVICE FOR AUTOMOBILE WHEELS

Marvelle Saunders, Springfield, Mo., assignor to The Union National Bank of Springfield, Springfield, Mo.

Filed Mar. 22, 1972, Ser. No. 237,116
Int. Cl. B60c *27/04*
U.S. Cl. 152—225 7 Claims



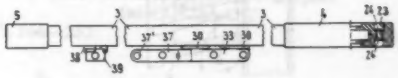
A traction device for automobile wheels comprises a circular frame member having an inner mounting portion formed with apertures to receive conventional lug bolts of a wheel assembly to secure the traction device to the wheel assembly, and a plurality of L-shaped traction bars reciprocably mounted in radial through-bores adjacent the periphery of the frame, the outer arms of the traction bars extending axially over the outer tread surface of the pneumatic tire of the wheel assembly. The traction bars are resiliently biassed outwardly, and are adjustably positioned radially by threaded nuts on the inner ends of the bars where they project from the through-bores. The bars are thus easily removable, and are relatively free to reciprocate radially with flexing of the tire.

3,753,457

ELECTROMECHANICAL PULLING DEVICE FOR RAIL-GUIDED HANGINGS, PARTICULARLY CURTAINS

Konrad Bratschi, Elgerstrasse 5, CH-3007, Bern, Switzerland

Filed July 27, 1971, Ser. No. 166,355
Claims priority, application Switzerland, July 28, 1970, 11376/70
Int. Cl. A47h *5/02*
U.S. Cl. 160—331 11 Claims



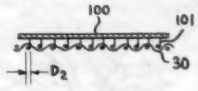
An electromechanical device for pulling curtains or other rail-guided hangings comprises a driving unit which can be attached in a number of different positions to a second unit which incorporates a guide rail, a perforated endless band running in channels in the rail, and pulleys accommodated in casings at each end of the rail for reversing the direction of movement of the band between forward and return runs. The attachment is effected by means of headed bolts accomodated in resilient apertures, and by a tongue-and-slot connection between a shaft of the driving unit and the shaft of one of the pulleys. Sliders are accommodated in a channel in the rail, having parts engageable from outside the rail for supporting a curtain and further parts for engaging the holes in the band.

3,753,458

DEMOUNTABLE CAR WINDOW SCREEN AND FASTENING MEANS THEREFOR

Andrew H. Lazarek, 2319 Arnold Ave., Yorkville, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,363
Int. Cl. A47h *3/00*
U.S. Cl. 160—354 1 Claim



A demountable screen for a car window which comprises a sheet of screening somewhat larger than the car window cut to the configuration of the car window; and a strip of male and female Velcro, one strip of which is mounted around the car window and the other strip is mounted to the screen around the periphery thereof so that the screen may be demountably attached to the window. In an alternate embodiment a strip of material having projections thereon that mate with the apertures in the screen is mounted around the window so that the screen may be placed over the window and against the projection, thereby demountably attaching the screen to the car window.

3,753,459

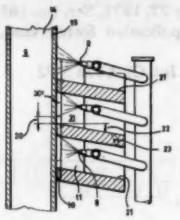
METHOD AND APPARATUS FOR COOLING AND GUIDING STRANDS IN CONTINUOUS CASTING MACHINES

Max Burkhardt, Zurich; Armin Thalmann, Uster; Ferdinand Fiala, Thalwil, and Markus Schmid, Zurich, all of Switzerland, assignors to Concast AG, Zurich, Switzerland

Filed Aug. 30, 1971, Ser. No. 176,107
Claims priority, application Switzerland, Sept. 4, 1970, 13266/70
Int. Cl. B22d *11/12*
U.S. Cl. 164—89 16 Claims

In continuous casting, the cast strand which emerges from the casting mold is conducted through a secondary cooling zone wherein it is guided and supported between latticed

guide plates having guide faces which contact areas of the surface of the casting which are supported thereby, and having windows therethrough bounded by said guide faces. The unsupported areas of the surface of the casting which are exposed by said windows are cooled by sprays of cooling water from spray nozzles located in the windows.

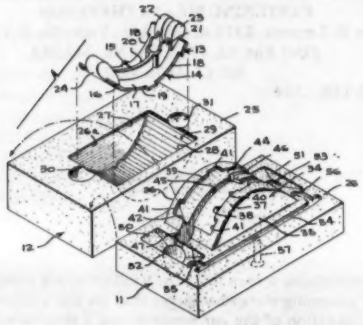


3,753,460

METHOD OF MAKING A BRAKE SHOE

Harry Bradshaw, Newport, Va.; Hunter R. McKenney, Prattville, Ala., and Roland W. McKenzie, Culpeper, Va., assignors to Standard Forge and Axle Company, Incorporated, Montgomery, Ala.

Filed Aug. 25, 1971, Ser. No. 174,634
Int. Cl. B22d *23/00*
U.S. Cl. 164—131 **8 Claims**



A method of making a brake shoe having a curved table section and at least one rib section disposed on the concave side of the table section, generally including casting the brake shoe in a mold having cope and drag sections so that the axis of curvature of the table section thereof is disposed substantially parallel to the parting plane of the mold sections whereby no draft or parting ridge is formed on the outer curved surface of the table section.

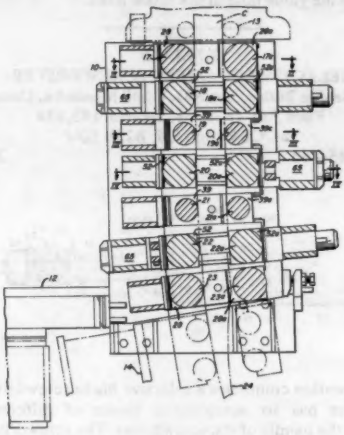
3,753,461

BENDING-ROLL UNIT FOR CONTINUOUS-CASTING MACHINE

Francis Gallucci, Irwin, and George J. Wagner, Jr., McDonald, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 16, 1971, Ser. No. 208,776
Int. Cl. B22d *11/12*
U.S. Cl. 164—282 **11 Claims**

A bending-roll unit for continuous-casting machines, where the unit directly follows a guide-roll rack and precedes a curved roll rack. The unit embodies a combination of driven rolls and idlers arranged in opposed pairs. One of the driven rolls is a fulcrum roll which defines the tangent line where a casting first acquires a curvature. Other driven rolls above and below the fulcrum roll sustain the reaction forces. These driven rolls also supply the initial tractive force which propels the casting and thus eliminate the need for separate driven pinch rolls usually located above the bending rolls. Floating idlers confine the casting against bulging. The unit may be used with either a flexible starter bar or slightly modified with a rigid bar.

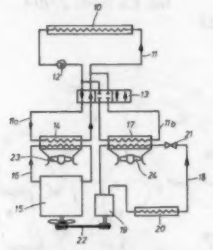


3,753,462

APPARATUS FOR HEATING AND COOLING A VEHICLE PASSENGER COMPARTMENT

Karl-Heinz Burger, Buhl, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 1, 1971, Ser. No. 194,575
Claims priority, application Germany, Oct. 30, 1970, P 20 53 370.4
Int. Cl. B60h *3/04*
U.S. Cl. 165—23 **13 Claims**

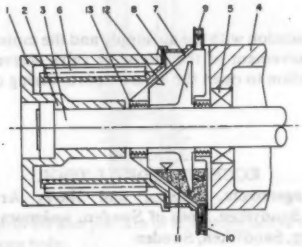


An apparatus for heating and cooling the passenger compartment of a motor vehicle quickly brings the temperature of the compartment to the desired level and the temperature is thereafter maintained at a constant level without the use of blowers. The apparatus includes first and second heat exchangers which are separately or in combination selectively connected for establishing a heat-exchanging relationship between a third heat exchanger and the first and second heat exchangers. The third heat exchanger has a relatively large surface area and is located within the vehicle passenger compartment. The first and second heat exchanger rapidly bring the temperature of the passenger compartment to the desired level with the assistance of blowers, adjacent to these two heat exchangers, which blow the conditioned air into the passenger compartment. After the desired temperature has been reached, the fans are turned off and the temperature in the compartment is maintained by radiation by the third heat-exchanger and at least one of the other two heat exchangers.

3,753,463
DEVICE FOR COOLING THE BEARINGS OF HEATED ROLLS

Rudolph Segelken, Muelheim; Oskar Tippmann, Laemmerspiel, and Peter Westebbe, Offenbach-Buergel, all of Germany, assignors to Dienes-Honeywell GmbH, Muelheim am Main, Germany

Filed Sept. 9, 1971, Ser. No. 178,958
Claims priority, application Germany, Dec. 28, 1970, P 70 47 913.9
Int. Cl. F24h *3/00*
U.S. Cl. 165—47 9 Claims



A cooling device for the bearings of overhung supported heated rolls. Such a device must shield the bearing against the thermal radiation of the heating device and the heated roll. A tube-like hollow body is mounted between the bearing and the heat source, that is, the heating device and heated roll. A drive shaft between the bearing on one side and the heated roll on the other is passed through the hollow body. The hollow body which the drive shaft passes through is completely sealed to contain the cooling fluid being passed or flown through the hollow body.

3,753,464
ARRANGEMENT FOR INHIBITING THE UNTHREADING OF CASING STRING DURING WELL COMPLETIONS

Billy M. Wilhelm, c/o Parker Drlg. Co., Box 3644, Quito, Ecuador

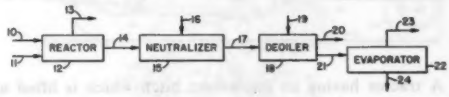
Filed July 7, 1971, Ser. No. 160,401
Int. Cl. E21b *17/02, 17/14*
U.S. Cl. 166—242 2 Claims

A plurality of sections of tubular members is arranged in end-to-end relationship with couplings between the sections of tubular members for connecting them together. The sections of tubular members and couplings are provided with left-hand threads to inhibit the unthreading of the tubular sections during well completions. The casing string may include so-called auxiliary equipment for aiding in floating it into position in the well bore and guide equipment which is also provided left-hand threads.

3,753,465
METHOD FOR CONTROLLING THE VISCOSITY OF SURFACTANT SOLUTIONS

Milton O. Denekas, Houston, Tex., assignor to Esso Production Research Company

Filed Nov. 22, 1971, Ser. No. 201,089
Int. Cl. E21b *43/22*
U.S. Cl. 166—252 6 Claims

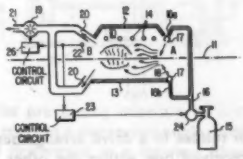


A method of recovering oil from a subterranean formation using an aqueous surfactant solution with a predetermined and controlled viscosity. The ability of the surfactant composition to impart viscosity to the aqueous solution is dependent upon the weight ratio of hydrocarbon oil in the composition to the surfactants in the composition. This oil/surfactant weight ratio must be maintained within the range of 0.05 to 0.40 to obtain a surfactant composition having the ability to impart a desired viscosity to its aqueous solution. The ratio can be maintained within this range and varied in value to change the viscosity-imparting properties of the surfactant composition by adjusting the deoiling process during the manufacture of the surfactant composition or by adding hydrocarbon oil to the surfactant composition.

3,753,466
AUTOMATIC FIRE EXTINGUISHER IN ELECTROPHOTOGRAPHIC COPYING MACHINE OR THE LIKE

Kaoru Uematsu, Okegawa, Japan, assignor to Fuji Xerox Co., Ltd., Minato-ku, Tokyo, Japan

Filed Dec. 2, 1971, Ser. No. 204,068
Claims priority, application Japan, Dec. 29, 1970, 45/130482
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R 3 Claims



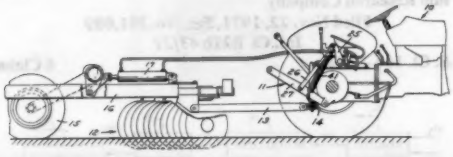
An automatic fire extinguishing device for use in an electrophotographic copying machine or the like having a heat treating section including inlet and outlet portions through which flammable material is passed and heat treated, the fire extinguishing device including means for detecting a fire in the heat treating section, a source of fire extinguishing gas, means responsive to the fire detecting means for releasing fire extinguishing gas upon detection of a fire, nozzle means connected to the source of fire extinguishing gas for spraying upon outbreak of a fire, the fire extinguishing gas in the form of a curtain so as to form an air curtain of the extinguishing gas at at least one of the inlet and outlet portions of the heat treating section to prevent the inflow of air therethrough, and an exhaust system responsive to the fire detecting means for sucking up the fire extinguishing gas after it has performed its function as an air curtain, so as to let it cover the source of the fire, and for discharging hot air in the heat treating section to the outside of the machine.

3,753,467

TRACTOR-IMPLEMENT HYDRAULIC LIFT SYSTEM

Raymond W. Wilson, Washington, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1971, Ser. No. 212,361
Int. Cl. A01b *63/112*
U.S. Cl. 172—3 4 Claims



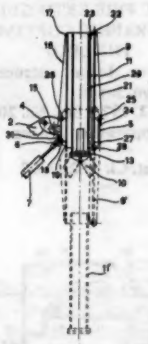
A tractor having an implement hitch which is lifted and lowered by a hydraulic lift system responsive to driveline torque is coupled to the hydraulic lift system of an implement attached to the rear of the tractor to control the implement hydraulic lift system responsive to driveline torque of the tractor.

3,753,468

DRIVE ARRANGEMENT FOR TELESCOPICALLY ARRANGED ELEMENTS

Bruno Casagrande, Via Zoneanard, 33077 Sacile, Italy

Filed Mar. 13, 1972, Ser. No. 233,970
Claims priority, application Italy, Mar. 18, 1971, 83325 A/71
Int. Cl. E21b *17/00*
U.S. Cl. 173—44 5 Claims



The invention relates to a drive arrangement for elements telescopically received one within the other. At least three telescopic elements are required, the intermediate one functioning as a movable pulley wheel for a fixed length cable means fixedly attached at opposite ends thereof to the outer and the inner elements respectively.

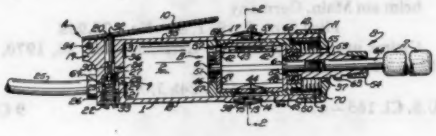
3,753,469

AIR TOOL

Herman C. Tuttle, 26720 Whiteway Dr., Richmond Heights, Ohio

Continuation-in-part of Ser. No. 841,875, July 15, 1969, Pat. No. 3,602,315. This application Aug. 27, 1971, Ser. No. 175,474
Int. Cl. B23b *45/04*
U.S. Cl. 173—163 5 Claims

A portable air tool having a rotary air motor mounted in a tubular valve sleeve or housing so that relative axial movement between the motor exhaust ports and the valve sleeve or housing opens and closes said exhaust ports. A spring biases the air motor or the valve sleeve in one direction to choke the exhaust and to effect rapid deceleration of the rotor shaft when the air supply is cut off, and an air chamber is provided



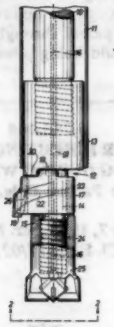
in communication with the air supply and the motor inlet ports to effect movement of the motor or valve sleeve in the opposite direction to open the exhaust ports during operation of the tool.

3,753,470

ECCENTRIC DRILL TOOL

Gunnar Lagerstrom, Ektorp, and Harry Artur Ingvar Wiredal, Sandviken, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Nov. 29, 1971, Ser. No. 202,827
Claims priority, application Sweden, Nov. 27, 1970, 16078/70
Int. Cl. E21b *9/26*
U.S. Cl. 175—292 9 Claims



For use in drilling through earthy material into underlying rock, the eccentric drill tool of the present invention is generally characterized by two cutting portions, with a central portion which is fixed in relation to the drill rod and an eccentric portion which can be shifted between protruding and retracted positions.

3,753,471

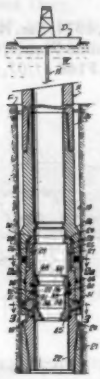
DISCONNECTIBLE TORQUE AND DRILLING WEIGHT TRANSMISSION APPARATUS FOR DRILL BITS

Archer W. Kammerer, Jr., Fullerton, Calif., and Gary R. Johnson, Houston, Tex., assignors to Baker Oil Tools, Inc., Los Angeles, Calif.

Division of Ser. No. 132,993, April 12, 1971, which is a continuation-in-part of Ser. No. 23,700, March 30, 1970, abandoned. This application Oct. 18, 1971, Ser. No. 190,181
Int. Cl. E21b *17/046, 17/06*
U.S. Cl. 175—320 6 Claims

A drill pipe string secured to a rotary drill bit for drilling a bore hole from an ocean floor to a desired depth, the drill pipe string having a releasable connection above the drill bit through which torque and drilling weight can be transmitted to the drill bit, such connection being readily disconnected

after the bore hole has been drilled to permit recovery of the portion of the drill pipe string above the connection while



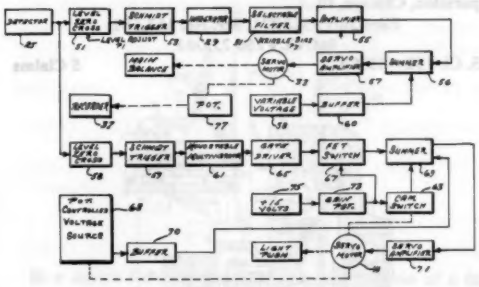
leaving the drill bit and portion of the string below the connection in the bore hole.

3,753,472

LIGHT PRESSURE OPERATED MICROBALANCE SYSTEM

Jens P. Dybwad, Arlington, Mass.; Winser E. Alexander, Albuquerque, N. Mex., and Karl P. Zinnow, Arlington, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 12, 1971, Ser. No. 171,077
Int. Cl. G01g 3/14, 7/00
U.S. Cl. 177—210 **4 Claims**



A swinging undamped microbalance that measures time intervals of successive half periods of complete swings using an optical lever consisting of a light source aligned to reflect light from a mirror mounted upon the balance onto a light sensitive detector. The time intervals which are electronically processed determine an off-balance signal that drives a servo which restores the balance by applying light pressure to a mirrored surface of a counter weight. The restoring force is in relation to weight increases of the sample being weighed.

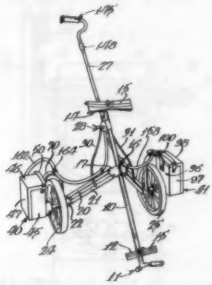
3,753,473

GOLF CART WITH OUTBOARD POWER UNIT

Roger M. Hollis, 2823 Gulf of Mexico Dr., Longboat Key, Sarasota, Fla.

Filed Aug. 3, 1971, Ser. No. 168,663
Int. Cl. B62d 51/04
U.S. Cl. 180—19 H **16 Claims**

A collapsible powered two-wheel golf bag cart including a frame, collapsible leg structures on the frame each carrying a ground-engaging wheel, golf bag support means on the frame, a handle on the frame for manipulating the cart, a motor unit detachably supported on one of the leg structures outside of the adjacent wheel including an electric motor, a disconnectible coupling for connecting the motor to drive the adjacent wheel, a battery unit detachably supported on the other leg structure outside of the adjacent wheel, a hand grip on the



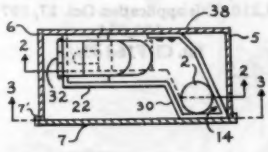
handle extending transverse to the length of the handle, control means on the hand grip adjacent one end thereof in circuit with the battery and the motor by means of wiring extending through the handle for controlling motor energization and motor speed, and means mounting the hand grip for rotation to dispose the control means laterally at either side of the handle for manipulation by the thumb and/or forefinger of either hand of the golfer.

3,753,474

VEHICLE OVERTURN PREVENTER

Eugene Roland Dillmann, 398 Washington St., Bay St. Louis, Miss.

Filed June 4, 1971, Ser. No. 150,020
Int. Cl. B60k 27/08
U.S. Cl. 180—104 **10 Claims**

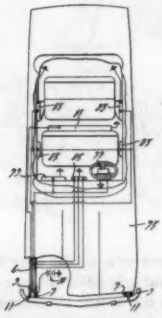


Mechanism for preventing overturn of a tractor or other vehicle when it rears to a dangerous angle, comprising: a track that is inclined downward in a forward direction when the vehicle is in level position, and forwardly inclined upward when the front end of the vehicle has dangerously tipped upward; an upright chute connected to the rear end of the track; a spherical weight that normally remains at a forward part of the track, but when the vehicle is at a dangerous inclination moves down the track incline and falls down the chute; a device for controlling the power of the vehicle's motor comprising a lever pivotal in the chute (shown as an electric switch control lever, but optionally instead may be a throttle valve control lever), this device being actuated into motor-stopping position by the falling ball; and braking means for retarding and preventing movement of the ball into the chute due to vibrations of the vehicle and changes of its level until it reaches a dangerous angle, threatening overturn. This braking means comprises two elements: an upright baffle plate, making difficult the ball's climb out of a forward corner of the track; and a hinged, lead-weighted lever that must be pivoted out of the way before the ball enters the chute. Instead of the levered switch a push button may be utilized.

3,753,475
PASSENGER SAFETY RESTRAINT DEVICE INCLUDING BUMPER MOUNTED SWITCH AND ASSOCIATED CIRCUITRY

Poul H. Andersen, 2448 N. Wilson, Royal Oak, Mich.; Frank R. Povilaitus, 3620 Finch Rd., and Robert S. Himes, 4146 Gatesford Circle Rd., both of Troy, Mich.

Filed Nov. 15, 1971, Ser. No. 198,541
Int. Cl. B60r *21/00*; H01h *3/16*
U.S. Cl. 180—91 3 Claims

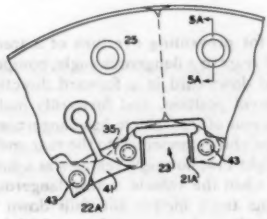


Sensing device for sensing the velocity of an automotive vehicle when the latter collides with another object, the device having a plurality of contacts adapted to be electrically interconnected at different times depending upon the velocity of the vehicle at the moment of impact.

3,753,476
BRAKE DISC SUBASSEMBLY WITH SEGMENTED BERYLLIUM CORE

Joseph F. Dernovashek, Akron; Peter D. Birmingham, Suffield, and Charles E. Fuchs, N. Canton, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 49,242, June 24, 1970, Pat. No. 3,710,210. This application Oct. 27, 1971, Ser. No. 192,974
Int. Cl. F16d *65/12*
U.S. Cl. 188—73.2 6 Claims

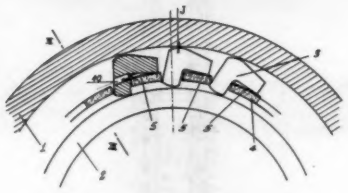


Brake discs which have a pair of annular steel plates and segmented beryllium filler plates between the annular steel plates. The steel plates have sintered metallic outer faces and are riveted together on opposite sides of the beryllium plates. The beryllium filler plates extend from the center of one key slot to the center of the adjacent key slot and each of the filler plates is sloped on one or more edges. Metallic inserts are riveted to the annular steel plates. The inserts serve to transmit torque across a broad area to the beryllium filler pieces by wedging action between the sides of the inserts and the sloped portions fo the filler plates.

3,753,477
GRADUAL-LOCKING FREEWHEELS

Raymond Cadet, Annecy (Haute Sanoie), France, assignor to Societe Nouvelle De Roulements Annecy, Haute Savoie, France

Filed Oct. 1, 1971, Ser. No. 185,770
Claims priority, application France, Oct. 16, 1970, 7037434
Int. Cl. F16d *41/07*, *43/24*
U.S. Cl. 192—41 A 6 Claims

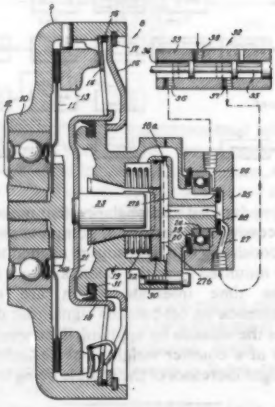


This freewheel device of the wedging-cam locking type comprises a series of cam members retained by a positioning cage between inner and outer rings. The cam members are held in relative position and in bearing engagement with the cage by individual resilient means counteracting the action of the centrifugal force. Said cage is connected to one ring and the cam members engage the rings by pivoting or rocking under the centrifugal force only beyond a predetermined speed given for a limited number of cam members of which the return force of the individual resilient means is the lowest and balanced by the centrifugal force. This device is applicable to the freewheel coupling between engine and change-speed mechanisms of automotive vehicles.

3,753,478
CLUTCH WITH FLUID OPERATED LOCK

Samuel Shiber, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed July 19, 1971, Ser. No. 163,681
Int. Cl. F16d *25/063*
U.S. Cl. 192—85 AA 5 Claims



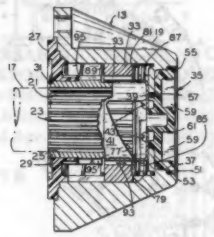
A clutch mechanism for coupling a first shaft to a second shaft comprising a friction plate which is connected to one shaft and a clutch housing, a pressure plate that is connected to the second shaft, a pressure actuated cylinder and piston assembly for urging the pressure plate against the clutch housing, locking the friction plate there-in-between, and a mechanical means to maintain the pressure plate and housing in this position.

3,753,479

CAM AND SPRING OPERATED POSITIVE CLUTCH

Richard D. Williams, Vancouver, Wash., assignor to Warm-Belleview Inc., Portland, Oreg.

Filed Jan. 17, 1972, Ser. No. 218,191
Int. Cl. F16d *11/04*
U.S. Cl. 192—89 A 9 Claims



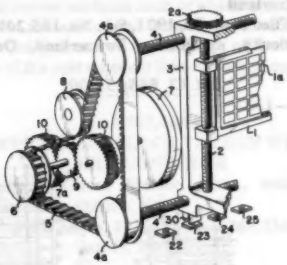
A wheel hub clutching mechanism has a dial which, when turned to a "lock" position moves an actuator cam to permit primary springs to move the clutch into mesh with the shaft driven pinion. When the dial is moved to a "free" position it moves the actuator cam to permit secondary springs to move the clutch out of mesh with the pinion.

3,753,480

STOPPING FOR FILM RETRIEVAL

Takeshi Okano, Nishinomiya-shi, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Kanagawa-ken, Japan

Filed June 21, 1971, Ser. No. 154,962
Claims priority, application Japan, June 29, 1970, 45/65187
Int. Cl. F16d *71/04*; G03b *23/08*
U.S. Cl. 192—141 8 Claims



In a device for restricting the stopping position of a film shifting mechanism by means of a cam stopper provided between the film shifting mechanism and a cam, a shock absorbing spring is disposed between the cam and a driving shaft. On the driving shaft are mounted two cams consisting of a normal rotation stopping cam and a reverse rotation stopping cam, and two stoppers are provided to stop the respective cams. These two stoppers are operated by a single operating lever.

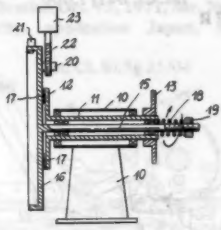
3,753,481

DEVICE FOR CONTROLLING THE STANDSTILL PERIOD OF INTERMITTENTLY MOVING ELEMENTS AS A FUNCTION OF THE CONTINUOUS MOVEMENT OF MECHANICAL MEMBERS

Aldo Piola, Villa Marisa, Inverigo (Como), Italy (22044), and Giovanni Sabate, Via Arrigo Bolto 12, Monza, Italy (22052)

Filed June 21, 1972, Ser. No. 264,768
Int. Cl. F61d *71/00*; B65h *57/28*
U.S. Cl. 192—142 R 4 Claims

A device for controlling the standstill period of intermittently moving elements as a function of the speed of continuously moving mechanical members. These members operate a first disc of a clutch slipping on a second disc, which is normally kept stationary by a latch and carrying in turn a ratchet



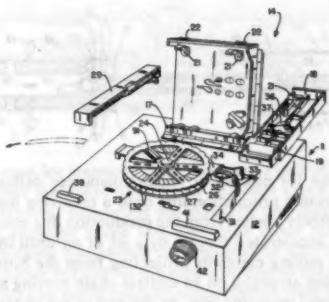
which, when said latch is released, concurrently with the stop of said elements, and the second disc rotates along with the first disc, acts upon a switch controlling the movement resumption for said moving elements.

3,753,482

AUTOMATIC PUSH BUTTON TAPE EMBOSSING MACHINE

Milton Brown, Berkeley; Eugene W. Beers, Lafayette, both of Calif., and Andre Nicole, Le Manoir, Switzerland, assignors to Dymo Industries, Inc., Emeryville, Calif.

Filed May 10, 1971, Ser. No. 141,643
Int. Cl. B41j *1/30*
U.S. Cl. 197—6.6 17 Claims



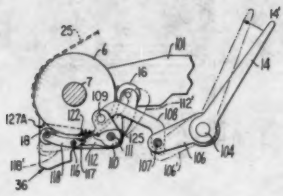
Apparatus for successively embossing characters onto a tape in response to depression of keys representative of the characters is described. The apparatus includes a rectangular keyboard and an embossing wheel having about its periphery an annular array of embossing dies corresponding to the characters to be produced. The embossing wheel is normally continually rotated during operation of the mechanism, and each of the keys has a stem which cooperates with a stop on the embossing wheel for interrupting the rotation of the wheel with the proper die positioned at an embossing station upon the depression of any one of the keys. A cam assembly is activated by the depression of one of the keys to then cause the character positioned at the embossing station to be embossed on a tape located at such station and also to advance the tape through the embossing station for appropriately spacing successively embossed characters.

3,753,483

TYPEWRITER DUAL FEED APPARATUS

Ingemar H. Lundquist, Oakland, and John Pastrone, Los Gatos, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Mar. 20, 1970, Ser. No. 21,433
Int. Cl. B41J 13/00
U.S. Cl. 197—127 R 1 Claim



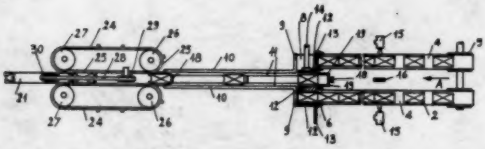
A typewriter capable of conventional paper feed downward and to the rear of the platen cylinder or upward from below the platen cylinder as for computer paper. A single arm and linkage assembly provides for roller release for conventional feed in a first position and for retraction of the entire platen assembly for computer paper feed in a second position. A sprocket drive operating in conjunction with the platen cylinder for computer paper is provided.

3,753,484

HANDLING DEVICE FOR DELICATE ARTICLES

Franco Aiuola, Bologna, and Luciano Nannini, Casalecchio Di Reno, both of Italy, assignors to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.P.A., Bologna, Italy

Filed July 19, 1972, Ser. No. 273,229
Int. Cl. B65g 47/22, 47/52
U.S. Cl. 198—20 R 3 Claims



A device for placing at regular distances delicate objects coming from a production line onto a receiving line. The objects are firstly pushed from the production line into a channel and then accelerated therein by a jet of air until they are engaged by pulling elements projecting from the bottom of the channel and arranged on an endless chain moving at the same speed of said receiving line. At the end of the channel the objects pass into receptales defined by the adjacent portion of a pair of parallel belts, from which they are expelled onto the receiving line by means of ejectors mounted on an endless belt located above said pair of belts.

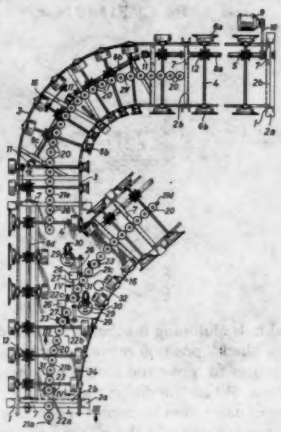
3,753,485

BRANCHING DEVICE AND GUIDE MEANS FOR HIGH-SPEED TRAY CONVEYORS

Hanes-Georg Fromme, Wetzlar, and Erich Lehberger, Dornholzhausen, both of Germany, assignors to Fa Fromme, Wetzlar, Germany

Filed Feb. 9, 1972, Ser. No. 224,771
Claims priority, application Germany, Oct. 13, 1971, P 21 50 984.2
Int. Cl. B65g 13/02, 47/26
U.S. Cl. 198—31 AC 13 Claims

Branching device and guide means for a high speed tray conveyor where each tray has in its bottom an hourglass-shaped central guide groove and the conveyor includes in its bend sections and branching sections groups or horizontal guide rollers engaging the tray grooves. In the branching section these guide roller groups are arranged to be raised and lowered by solenoids in staggered timing to permit a rapid succession of trays travelling through the branching section while the latter switches in and out.

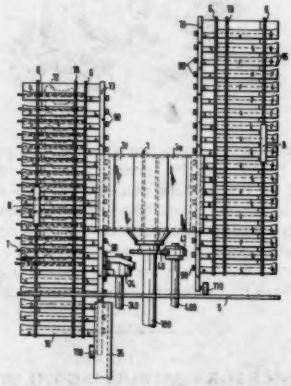


3,753,486

APPARATUS FOR LOADING AN AUTOMATIC FILM PROCESSING UNIT

Horst Dieter Vogt, and Oskar Schnellmann, both of Zurich, Switzerland, assignors to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Sept. 30, 1971, Ser. No. 185,249
Claims priority, application Switzerland, Oct. 2, 1970, 14626/70
Int. Cl. B65g 59/00
U.S. Cl. 198—131 13 Claims



Apparatus for loading an automatic film processing unit comprises a rotatable turret formed with guideways for holding magazines for axial movement relative to the turret. Each magazine comprises a stack of compartments each of which is adapted to accommodate a standard film container in a predetermined position. The turret is rotatable so that each magazine is successively in a processing station in which a shifting means engages and axially shifts the magazine stepwise so that each compartment is successively adjacent a

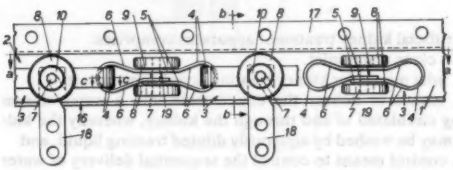
processing position, the magazines not in a processing station being engaged by means preventing axial movement. The magazines may be formed with compartments selectively adjustable to all hold either 126-type film cassettes or 135-type film cartridges, and means may be provided so that once a magazine holding one type of film has been placed on the turret, only magazines also holding that type of film can be positioned on the turret.

3,753,487

UNIVERSAL COUPLINGS AND CHAINS INCORPORATING SUCH COUPLINGS

Charles Milburn-Bathgate, West Hagley, England, assignor to Cavamatic Limited, Bridgnorth, Shropshire, England

Filed Apr. 2, 1971, Ser. No. 130,637
Int. Cl. B65g *17/20*
U.S. Cl. 198—177 R **4 Claims**



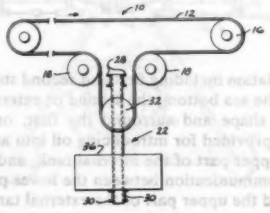
A universal coupling suitable for connecting chain links of the kind fabricated from metal strip, the coupling comprises two interconnected looped members which are located in planes normal to one another, and each of which has a curved end extending through the curved end of the other member, and a pivot block, trapped between the said curved ends, has two opposed convex surfaces each of which is concentric to an axis normal to the axis of the other surface and contacts the adjacent curved link end so that the axis of the block surface and the axis of the said adjacent link end are in parallel.

3,753,488

SAFETY DEVICE FOR A SLACK TAKE-UP WEIGHT OF A BELT CONVEYOR

Robert Laverne Wilson, Abilene, Kans., assignor to The Elvsam Company, Abilene, Kans.

Filed July 6, 1972, Ser. No. 269,334
Int. Cl. B65g *15/30*
U.S. Cl. 198—208 **1 Claim**



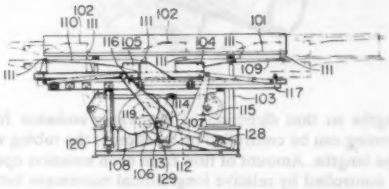
A safety device for a slack take-up weight of a belt conveyor, which includes a pair of guide members positioned on either side of the weight. The guide members are substantially vertical, being at a slight angle thereto, with the bottom ends closest together. If the conveyor belt breaks, the falling weight is gradually slowed down, and eventually stopped by the wedging action of the guide rails.

3,753,489

APPARATUS FOR TRANSFERRING FORMED ARTICLES BETWEEN PRESSES

Kunio Tomioka, and Yohiro Kubota, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-to, Japan

Continuation of Ser. No. 838,899, July 3, 1969, abandoned.
This application Oct. 15, 1971, Ser. No. 189,775
Claims priority, application Japan, Sept. 21, 1968, 43/68144
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 **3 Claims**



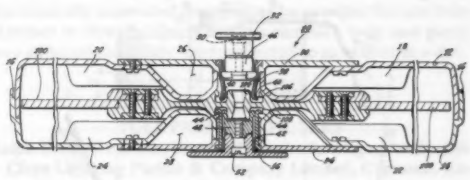
In a press line formed by aligning independent presses each allotted with an operational section interrelated therebetween, an apparatus for automatically transferring formed articles between presses.

3,753,490

CARRY CASE FOR MAGNETIC DISCS

Albert V. Mowrey, Canoga Park, Calif., assignor to General Instrument Corporation, Hawthorne, Calif.

Filed June 24, 1971, Ser. No. 156,382
Int. Cl. B65d *85/02*
U.S. Cl. 206—62 P **7 Claims**



A carry case for magnetic discs including a pair of interconnecting cover members forming an enclosed space and with the cover member supporting the magnetic disc therebetween within the enclosed space and with each cover member including a locking mechanism for engagement with a complementary locking portion on the magnetic disc so that the magnetic disc may be independently supported by each one of the cover members for insertion onto and removal from a drive spindle in a magnetic disc recording and reproducing machine.

3,753,491

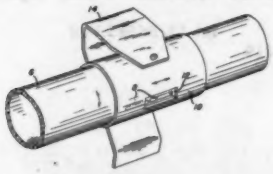
APPARATUS FOR SUPPLYING WASH WATER TO A SPIRAL CONCENTRATOR

Justus H. Vollmer, Grand Rapids, Minn., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 28, 1971, Ser. No. 213,072
Int. Cl. B03b *3/04*
U.S. Cl. 209—459 **2 Claims**

Apparatus includes a length of tubing, closed at one end and connected with a water supply at its other end, having water emission openings spaced therealong. The tubing is disposed along the length of the helical trough of the concentrator clamped to the inner sidewall thereof. A length of pipe is telescoped around at least some of the portions of the tubing having a water emission opening therein. The pipe lengths are

formed with cut-out areas intermediate their ends which normally span the water emission openings. The tubing is supported by means of elongated spring clamps each of which is connected by one end with a pipe length and at its other end is spring mounted around the upper edge of the inner sidewall of the helical trough. The tubing is slidable in each of the pipe



lengths so that direction of the water emission from each opening can be controlled by rotation of the tubing within the pipe lengths. Amount of flow from each emission opening can be controlled by relative longitudinal movement between the tubing and pipe lengths to partially or completely close any of the emission openings.

3,753,492

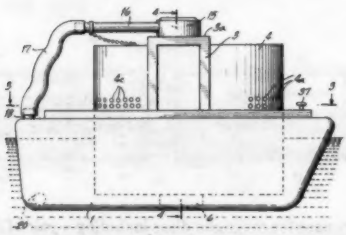
SEPARATING APPARATUS

Victor S. Aiello, Glen Cove; Joseph P. Albanese, Long Island City; Robert V. Anderson, Huntington, and Frank Platt, Brooklyn, all of N.Y.

Filed June 19, 1970, Ser. No. 47,778

Int. Cl. C02c *1/38*

U.S. Cl. 210—96 **9 Claims**



Apparatus for separating two non-miscible liquids of different densities from a mixture thereof, including a vertical cylindrical tank with an inlet at one side and an outlet at the opposite side. External means produces a flow of the mixture into the inlet and of the heavier liquid through the outlet. The tank extends above and below the liquid-air interface to provide a free liquid surface inside the tank. A rotating impeller at the center of the bottom of the tank swirls the liquid in the tank and creates a vortex. The lighter liquid collects in a thick layer at the center of the vortex and is substantially absent from the periphery of the vortex. The lateral outlet carries away the heavier liquid. An outlet for the lighter liquid has an opening submerged in the liquid at the center of the vortex. A pump removes the lighter liquid through this outlet.

The separating apparatus may be mounted on a twin hulled vessel and propelled through the water, for the purpose of removing an oil slick from the surface. The inlet for the oil and water mixture is at the bow end of the tank, with the water outlet at the stern end. The oil outlet is provided with a pump for transferring the oil into suitable storage tanks, which may be in the hull or in separate vessels. Means are provided for coordinating the operation of the impeller and the oil pump.

3,753,493

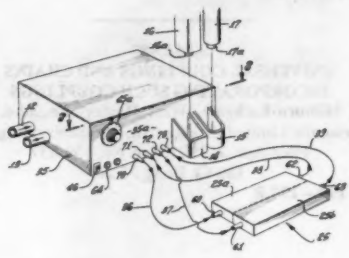
ARTIFICIAL KIDNEY CLEANING APPARATUS

Eli K. Mellor, 305 Andover Dr., Burbank, Calif.

Filed Apr. 23, 1971, Ser. No. 136,904

Int. Cl. B01d *31/00*

U.S. Cl. 210—140 **12 Claims**



Artificial kidney treatment apparatus comprises:

a. a clean water inlet,

b. inlet means for kidney treating liquid concentrate,

c. means to deliver the concentrate into a water stream being circulated to and through the kidney, whereby the kidney may be washed by aqueously diluted treating liquid, and

d. control means to control the sequential delivery of water flow to the kidney and dilute treating liquid flow to the kidney.

3,753,494

UNDER-SEA OIL STORAGE INSTALLATION

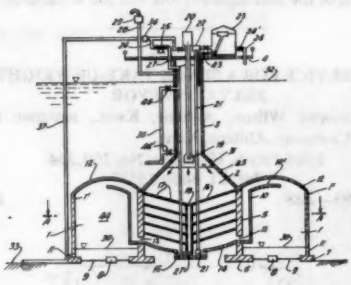
Hiroshi Hirata, 15-30 2-chome Sanno, Ota-ku, Tokyo, Japan

Filed Sept. 14, 1971, Ser. No. 180,293

Claims priority, application Japan, Dec. 15, 1970, 45/111157

Int. Cl. E02b *15/04*

U.S. Cl. 210—170 **15 Claims**

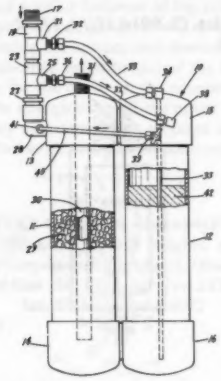


An installation including first and second storage tanks supported on the sea bottom; the second or external tank may be annular in shape and surround the first, or internal tank. Means are provided for introducing oil into and removing oil from, the upper part of the internal tank, and conduit means establish communication between the lower part of the internal tank and the upper part of the external tank. The external tank has openings at its bottom through which it communicates with the sea, and a roof having an arched cross-sectional shape. The outer wall of the internal tank may form the inner wall of the external tank and support a hollow shaft extending above the sea surface, the shaft carrying an equipment-supporting platform. Within the internal tank is a sludge-gathering means, which may be perforated plates or netting, for directing sludge into a deposit tank. Means are provided for agitating the sludge preparatory to its being pumped out of the deposit tank.

3,753,495
WATER CONDITIONING UNIT

Gust H. Bjork, Robbinsdale, Minn., assignor to Flickertail Industries, Inc., Linton, N. Dak.

Filed June 1, 1971, Ser. No. 148,376
Int. Cl. B01d *27/02, 35/02*
U.S. Cl. 210—206 8 Claims

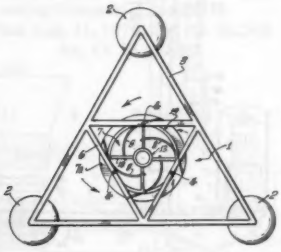


A water conditioning unit for conditioning water to reduce its degree of hardness, to remove suspended impurities and for clarifying, deodorizing and the like. The unit has connections for installation in any water distribution system. It includes a first filtering tank of granular carbonaceous material and an auxiliary tank of water softening chemical. Interconnections provide for diversion of water to the chemical tank and metering of the chemical solution into the water being treated.

3,753,496
CONVERGING VORTEX APPARATUS FOR SEPARATING OIL FROM WATER

Edward A. Boyd, San Diego, Calif.

Filed Dec. 20, 1971, Ser. No. 209,835
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 5 Claims

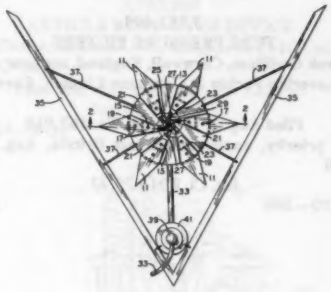


A vortex generator in the form of a funnel-shaped casing is submerged with its upper edge or lip portion in close proximity to an oil slick. A plurality of vanes carried by the casing induce a rotary motion in fluids passing through the casing. A suction pump creates the flow by drawing a mixture of water and oil through the casing, the mixture then being carried by a conduit to a nearby tank or reservoir where it can be separated.

3,753,497
POLLUTION SKIMMER

Benedict J. Hoffman, 2230 Chestnut St., Fort Wayne, Ind.

Filed June 10, 1971, Ser. No. 151,699
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 6 Claims

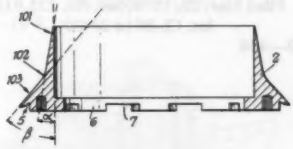


A skimmer for removing supernatant matter such as oil from a liquid such as water is disclosed having a base portion containing a centrally located drain and a plurality of troughs extending outwardly laterally from the drain but somewhat skewed relative to radii from the drain to aid in the formation of a vortex within the drain. The base portion is supported by a like plurality of laterally extending wings each having a density less than that of the liquid and each independently adjustably affixed to the base portion so that the elevation of the base portion relative to the liquid surface may be varied. A drain tube is connected to the lower end of the drain and after passing through a pump discharges the matter which is entering the drain into a surface material receptacle which may be a multiple outlet container for separating immiscible liquids. A V-shaped weir partially surrounding the base and wings and mechanically connected thereto may be provided for use if the skimmer in flowing liquids and the skimmer, weir and pump may all be mechanically interconnected so as to float as a unit.

3,753,498
TUBE PRESSURE FILTERS

Ralph Derek Gwilliam, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England

Filed Aug. 2, 1971, Ser. No. 168,040
Claims priority, application Great Britain, Aug. 7, 1970, 38,287/70
Int. Cl. B01d *29/38*
U.S. Cl. 210—350 9 Claims



The invention relates to tube pressure filters which include a pair of generally coaxial inner and outer tubular bodies arranged one within the other and adapted to be supported in a generally upright position, the inner tubular body comprising a central cylindrical section and upper and lower end sections, each of which end sections includes (i) a radially outwardly extending flange portion and (ii) a fairing mounted on or adjacent to said flange portion so as to extend around an end of said cylindrical section and an end of a filter element disposed around and supported by the inner tubular body. The fairing

for the lower end section of the inner tubular body is constructed so that at least the vertex of the fairing is formed from a resilient plastics material whereby discharge of filter cake from the tube pressure filter is facilitated. The fairing for the lower end section of the inner tubular body is also preferably provided with a concavely curved profile.

3,753,499

TUBE PRESSURE FILTERS

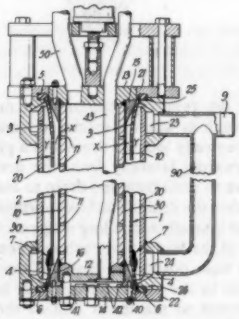
Ralph Derek Gwilliam, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England

Filed Aug. 2, 1971, Ser. No. 167,910

Claims priority, application Great Britain, Aug. 7, 1970, 38,297/70

Int. Cl. B01d *29/42*

U.S. Cl. 210—350 **12 Claims**



A tube pressure filter which comprises (a) a pair of generally coaxial inner and outer tubular bodies arranged one within the other and adapted to be supported in a generally upright position; (b) an impermeable elastic sleeve disposed within and secured to the outer tubular body; (c) a filter element disposed around and supported by the inner tubular body; and (d) means for displacing the tubular bodies axially relative to one another, wherein the impermeable elastic sleeve includes at least one means for ensuring that at least one annular portion of a filter cake formed on the filter element is substantially thinner than the major part of said filter cake, the or all of said annular portion(s) extending over a minor proportion of the length of said filter cake.

3,753,500

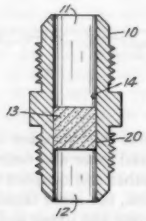
INTEGRAL IN-LINE FILTER

Douglas W. Voegeli, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company

Filed Mar. 20, 1970, Ser. No. 235,916

Int. Cl. B01d *27/00*

U.S. Cl. 210—446 **7 Claims**



An integral, composite filtration structure is formed in situ of thermosetting resin-coated particles bonded to each other and to the inner walls of a tubular article at the contiguous surface of said article and the resin-coated particles.

3,753,501

MEMBRANE FOR AN IN-VITRO-RESORPTION MODEL OF THE GASTROINTESTINAL TRACT

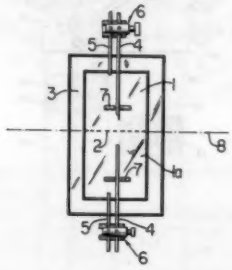
Herbert Stricker, Ingelheim am Rhein, Germany, assignor to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany

Continuation-in-part of Ser. No. 861,777, Sept. 29, 1969, Pat. No. 3,612,283. This application July 27, 1971, Ser. No. 166,350

Claims priority, application Germany, Sept. 27, 1968, P 17 98 340.3

Int. Cl. B01d *39/14, 31/00*

U.S. Cl. 210—490 **2 Claims**



A porous membrane adapted for use as the filter element in an in-vitro-resorption model of the gastrointestinal tract, said membrane consisting essentially of solid porous carrier material, especially porous cellulose nitrate, impregnated with a liquid phase consisting of a mixture of (1) a higher fatty acid, such as caprylic acid, or dioctyl sodium sulfosuccinate and (2) a neutral lipoid component, such as lauryl alcohol.

3,753,502

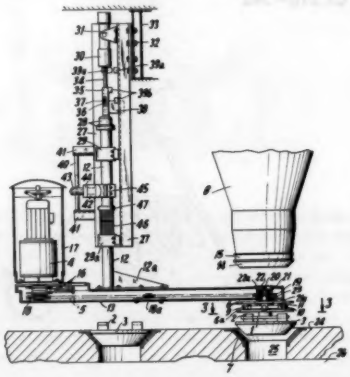
DEVICE FOR AUTOMATICALLY TURNING, LIFTING OFF AND REPLACING COVERS ON THE CHARGING SHAFTS OF COKING OVENS

Werner Abendroth, Recklinghausen, Germany, assignor to Firma Carl Still, Recklinghausen, Germany

Filed June 25, 1971, Ser. No. 156,916

Int. Cl. B66c *13/00*

U.S. Cl. 212—4 **10 Claims**



An automatic device for engaging and then subsequently turning and lifting off a cover for the charging shaft of a coking oven includes a horizontally extending support which is carried on a rotary column and which includes a drive motor thereon for rotating an engagement member through a clutch mechanism which causes the engagement and centering of a shaft cover and its rotation on a shaft seat in order to facilitate

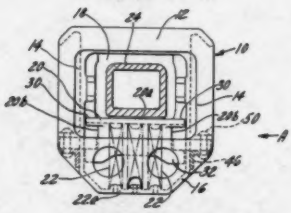
the lifting of the cover upwardly and away from a top opening of a charging shaft for a coking oven furnace. In one embodiment, the device includes a clutch mechanism which provides a centering of the cover and the holding of the cover in a centered position while it is rotated in order to facilitate the precise replacement of the cover in the centered position. The support is carried on a column which is mounted on a support or frame for rotary movement and which is guided for up and down movement in order to facilitate the lifting and lowering of the cover. The rotary movement of the column is effected by engagement of a roller follower of the column with a control cam which provides an accurate rotary shifting movement of the support during the upward and downward movement of the column. In another embodiment of the invention the engagement means for the cover on the support includes a magnet which may be energized to lift the cover upwardly instead of having a rotary cam arm which engages into open ends of oppositely directed angles carried on the cover's top.

3,753,503

COUPLER CARRIER ARRANGEMENT

Kenneth Louis DePenti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Mar. 24, 1972, Ser. No. 237,635
Int. Cl. B61g 7/12, 9/22
U.S. Cl. 213—61 **3 Claims**



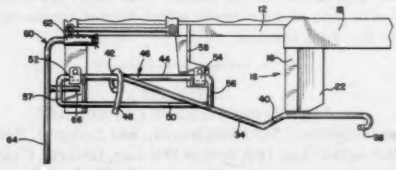
A railway car coupler flexible carrier in which the retainer plate for limiting upward movement of the carrier is held between a pair of horizontal flanges and is bolted or riveted thereto. One of the flanges is integral with the supporting structure and the other flange is on a separate member which first is positioned with the flange in engagement with the retainer plate and is then welded to the supporting structure.

3,753,504

UNCOUPLING LINKAGE MECHANISM

Franklin P. Adler, Michigan City, Ind., assignor to Pullman Transport Leasing Company, Chicago, Ill.

Filed Aug. 31, 1970, Ser. No. 68,268
Int. Cl. B61g 3/08
U.S. Cl. 213—166 **3 Claims**



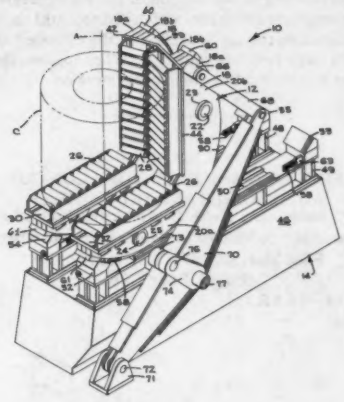
An uncoupling linkage mechanism including an auxiliary operating lever extending downward from the side of the railway vehicle and accessible therefrom, aid lever rotatable about an upper pivot and including an inwardly extending finger in contact with a pivoted rack bar of the uncoupling device. The lever is rotatable by pulley a specified number of degrees which results in approximately twice that amount of rotation by the rack bar which in turn rotates and raises an uncoupling rod which raises and lowers the coupler rotor to uncouple the railway car. The uncoupling device includes sliding elements enabling the device to remain operative during lengthwise and angular movement of the coupler.

3,753,505

ARTICLE ROLL-OVER DEVICE

Ralph C. Ouska, Hinsdale, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 10, 1971, Ser. No. 122,713
Int. Cl. B65g 7/00
U.S. Cl. 214—1 QF **3 Claims**



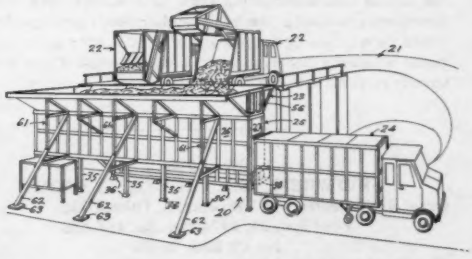
A coil of metal or paper strip to be upended or downended is placed on one bed of a cradle which is constructed of semicircular vertical parallel plates and which is mounted in rolling engagement on a track beneath the cradle. The cradle is then rolled along the track one-quarter turn or 90° by a drive system to axially reorient and laterally transfer the coil. One such drive system includes a combination of pivotally interconnected levers which are actuated by a drive train. As the cradle reaches its end point, the upended or downended coil then rests on a second bed of the cradle perpendicular to the initial bed.

3,753,506

UNITIZED REFUSE TRANSFER STATION

George W. Palmer, Durant, Okla., and William A. Herpich, Galion, Ohio, assignors to Bell & Howell Co., Pasadena, Calif.

Filed May 3, 1972, Ser. No. 249,929
Int. Cl. B65g 67/20
U.S. Cl. 214—16 R **2 Claims**



A unitary refuse transfer station that is transportable on or as a highway vehicle from fabrication site to destination. The

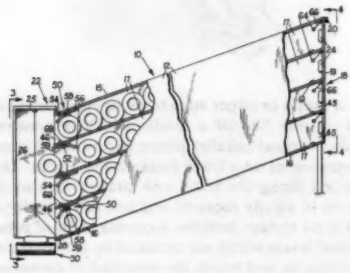
station comprises an elongated pit-like structure with an open top into which refuse may be dumped from route collection trucks. The main structure is originally fabricated with an outside width determined by the maximum width of a vehicle which may travel on the public highways. The pit-like structure has one or more hopper forming wings which are positioned within the structure when the entire station is being transported from factory to destination and which are swung up and out to widen its open top after positioning at the destination. Means are provided for supporting the structure at a desired ground related level. All auxiliary equipment and structural support means are also carried within the main structure during transportation. There is a transverse plate that is movable through the structure to push the refuse to one end. A compaction device has its receiving chamber at and beneath an opening in the bottom of the pit structure at that end of the structure and a ram which reciprocates through the chamber for compressing the refuse in the chamber and forcing it into a large portable container. When loaded, the portable container is moved to a dump or incinerator.

3,753,507

WAREHOUSING AND INVENTORY CONTROL OF AUTOMOBILE AND TRUCK TIRES

Millard P. James, and Keith B. Anderson, both of Portland, Oreg., assignors to Millard P. James, Portland, Oreg.

Filed Mar. 18, 1971, Ser. No. 125,539
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 R **2 Claims**



A method and apparatus for the warehousing and dispensing of round objects such as tires with an inventory control thereof. A storage structure is subdivided into a number of individual chutes, with each chute having an infeed opening and an outfeed opening connected by a sloped runway. Tires of a particular size are placed in each chute and roll to the bottom thereof where they can be selectively released by an operator-controlled brake and ejector arm assembly provided near the outfeed opening. A conveyor is provided near the base of the structure for receiving tires released from the chutes and transporting them to a service area. Switch means are provided at the infeed and outfeed openings of each chute for monitoring the passage of tires. A running inventory count is visually displayed upon a remote console that is electrically responsive to the switch means.

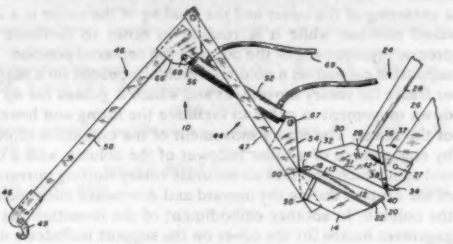
3,753,508

SKID WHEEL TRACTOR UTILITY BOOM

Orval R. Carpenter, 4347 W. 41st St., Tulsa, Okla.

Filed June 24, 1971, Ser. No. 156,438
Int. Cl. B66c *23/00*
U.S. Cl. 214—130 R **4 Claims**

A lightweight, hydraulically actuated boom adapted for rapid attachment to, and detachment from, a material-handling power boom. It comprises a base plate adapted to fit and to be latched to a cooperative mounting means on the free end of the power boom. A first arm is fastened to the base plate



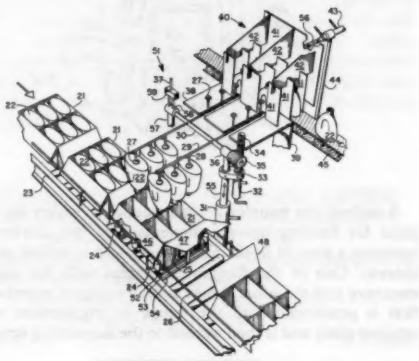
and carries a hudraulic cylinder. A second arm is hingedly supported from the free end of the first arm, the piston of the hydraulic cylinder being fastened to the second arm.

3,753,509

BOTTLE UNCASER-SINGLE LINER

Ronald W. Kock, Jackson, Tenn., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 16, 1971, Ser. No. 134,597
Int. Cl. B65b *21/04*
U.S. Cl. 214—309 **7 Claims**



A machine having an unloading device integrated with a single lining device. The unloading device reciprocates vertically and rotates in a vertical plane to remove containers such as bottles from reshipper cases. It grips the bases of the inverted containers, lifts them vertically from a case and simultaneously rotates to invert and move the gripped containers to a deposit station, whereat the containers are lowered and released between parallel plates which move the containers a row at a time to a conveyor which carries the containers to other operating stations.

3,753,510

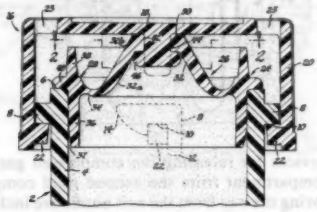
LIQUID PROOF SAFETY PACKAGE

Peter Hedgewick, 3691 Victoria St., and Lothar J. Bauer, 306 Partington, Apt. 105, both of Windsor, Ontario, Canada

Continuation-in-part of Ser. No. 73,821, Sept. 21, 1970, abandoned. This application Mar. 12, 1971, Ser. No. 123,645
Int. Cl. B65d *41/06*, *55/02*
U.S. Cl. 215—9 **41 Claims**

A liquid proof safety closure and container assembly including a cap and container having complementary bayonet locking means with a sealing member interposed between the container and the end wall of the cap for resiliently maintaining the cap and container in locked engagement, and for

providing a seal for the contents of the container. The sealing member comprises a one-piece plastic body having a plunger portion overlying the mouth of the container and a sealing portion engaging the mouth portion of the container. The plunging portion includes a base portion engaging the cap with a side wall portion extending from the periphery of the base portion and terminating in a resilient, outwardly extending



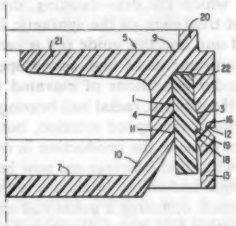
spring portion joined to the inner periphery of the sealing portion. The sealing portion includes an axially extending seal for sealing engagement with the inner surface of the mouth of the container and a cylindrical rib projects from the spring member toward the end wall of the cap and is operable after predetermined deflection of the spring portion to force the sealing portion into sealing engagement with the container upon further axial movement of the cap toward the container.

3,753,511

CONTAINER AND CLOSURE THEREFOR

Heinz Ruch, 11, Friedensgasse, Basel, Switzerland

Continuation of Ser. No. 119,629, March 1, 1971, abandoned.
This application Dec. 4, 1972, Ser. No. 310,322
Claims priority, application Switzerland, Mar. 2, 1970, 3023/70
Int. Cl. B65d *43/02, 41/22*
U.S. Cl. 215—46 A **16 Claims**



A container and closure therefor comprises an open top or mouth container having a container wall provided with a circumferential shoulder close to the upper end of the wall, and a push-in cover member having a circumferential raised rim portion provided with a circumferential skirt member depending externally over the container wall. The skirt member has its inner wall surface provided with a projection which engages underneath said shoulder on the container wall when the cover member is pushed over the open top of the container. A circumferential notch on the outer side of the skirt member provides a weakening line permitting to tear off a lower portion of the skirt member provided with said projection when the container is to be opened, but leaving the remaining cover member intact to be reusable for closing the container. The cover has a bulged portion on the outer surface of the inner wall and there is a shaped contoured fit between the container and cover.

3,753,512

CONTAINER AND CLOSURE

John J. Curry, Westchester, Ill., assignor to Phoenix Closures, Inc., Chicago, Ill.

Filed Oct. 27, 1970, Ser. No. 84,348
Int. Cl. B65d *43/04*
U.S. Cl. 220—43 R **9 Claims**

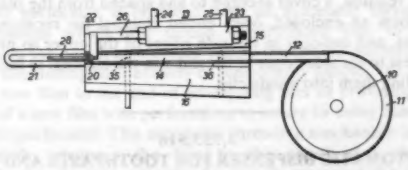
This disclosure relates to a container formed of thermoform plastic material and a metallic closure, the closure being of a conventional construction and including a downwardly opening channel in part defined by an outermost peripheral wall terminating in a raw severed edge, the container having a body terminating at an upper end portion in a radially upwardly outwardly and downwardly directed wall, the latter of which joins a generally radially outwardly directed peripheral wall which underlies the free raw edge of the lid to prevent contact thereof with a person's hand. The peripheral wall includes as an integral extension thereof a tab for manually deflecting the lid upwardly to facilitate the removal thereof. Additionally, the outermost maximum diameter of the downwardly directed container wall portion is normally greater than the diameter of the innermost surface of the outermost lid wall whereby the downwardly directed portion of the body will be directed radially inwardly when the lid is in its seated position.

3,753,513

HANDLING AND SORTING DEVICES

Julian Pascoe Grenfell, Weybridge, and John Brown Buchanan, Mytchett, both of England, assignors to Badalex Limited, Weybridge, England

Filed May 5, 1972, Ser. No. 250,749
Claims priority, application Great Britain, May 6, 1971, 13528/71
Int. Cl. B23q *7/04*; B65g *17/46*
U.S. Cl. 221—1 **15 Claims**



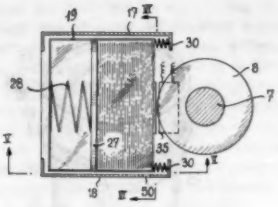
Apparatus and method for handling or sorting articles of magnetic material by magnetomotive means. The articles are fed to a guide across which a magnetic flux is maintained between a pair of pole pieces of a magnetomotive means; the magnetic flux increasing in density along the guide so as to separate and move the articles along the guide in the direction of increasing magnetic flux density.

3,753,514

APPARATUS FOR SELECTIVELY DISPENSING ARTICLES STORED IN A PLURALITY OF CONTAINERS

Pierre Naguet, 2, rue Carnot-93, Noisy le Grand, France

Filed July 18, 1972, Ser. No. 272,756
Claims priority, application France, July 20, 1971, 7126478
Int. Cl. B65h *1/12*
U.S. Cl. 221—129 7 Claims



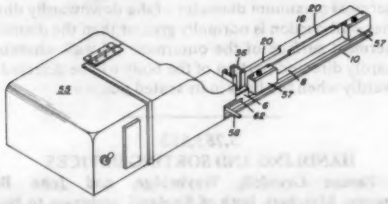
A vending machine including a plurality of movable containers for articles to be dispensed, the containers being mounted adjacent a rotatable shaft which supports drive rollers. The containers are selectively magnetically energized so as to move toward the shaft where a drive roller will contact and drive an article out of each selected container.

3,753,515

SLIDE TRANSPARENCY SPREADING DEVICE

William F. Coons; George T. Negus, and Patrick A. Teora, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1972, Ser. No. 223,158
Int. Cl. B65h *3/24*
U.S. Cl. 221—191 10 Claims



A spreading device for slide transparencies (hereinafter referred to as slides) for spreading or arranging a plurality of such slides in a row in side-by-side relation for loading into a slide clip. The clip is preferably formed of two opposing, substantially U-shaped channel sections connected back-to-back and having flexible legs biased toward one another. The slide spreading device comprises a platform onto which the slides are fed one at a time, preferably emulsion side up, in side-by-side relation, a cover secured to and spaced from the platform to form an enclosed, open ended channel for receiving the slides, and cut-outs in the side edges of the cover to provide access to the side edges of the slides in the channel to facilitate loading them into a slide clip.

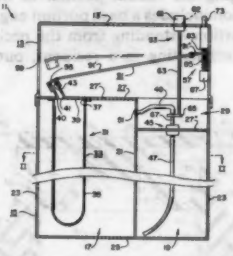
3,753,516

AUTOMATIC DISPENSER FOR TOOTHPASTE AND THE LIKE

Ernest L. Crider, 1902 Nantucket, Memphis, Tenn.

Filed Oct. 7, 1971, Ser. No. 187,397
Int. Cl. B65d *35/28*
U.S. Cl. 222—95 2 Claims

A dispenser for toothpaste and the like in which compressed gas controls the flow of the material to be dispensed from a flexible holder through an exit nozzle equipped with a removably mounted cap. A rigid compartment surrounds the flexible holder and allows gas to enter from a second rigid compartment, thus allowing the gas to compress the flexible tube, forcing the material to be dispensed out the exit nozzle.



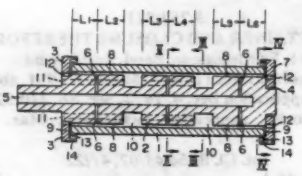
Actuating devices for releasing the compressed gas into the first rigid compartment from the second rigid compartment and for removing the cap from the exit nozzle are included.

3,753,517

GUIDE ROLL FOR FILAMENTS

Yoshisuke Takenaka, and Hideki Aoyama, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Sept. 15, 1972, Ser. No. 289,316
Claims priority, application Japan, Nov. 26, 1971, 46/110976; Apr. 7, 1972, 47/34907
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 8 Claims



This invention provides a guide roll for filaments as used in apparatuses in which the draw-twisting, draw-winding, false twisting or heat treatment of the synthetic filaments and the like are carried out, and this guide roll is particularly devised to meet the requirements of high speed operation. Again, it can be used under conditions of elevated temperature and high humidity. Heretofore, radial ball bearings have been used in the guide rolls of low speed rotation, but to meet the demands for an increase in the production in recent years guide rolls equipped with fluid bearings are now being used in view of their low torque and ability to endure its high speed operation. This invention concerns a guide roll equipped with this type of fluid bearing and is one whose performance has been enhanced by specifying as to its basic factors, with a mathematical formula, as a result of detailed observations and repeated experimentation, the numerical values involved in its designing, and also through elaborate works in the detailed parts of the fluid bearing, by eliminating the points which might become causes for trouble. Thus, the guide roll according to the present invention not only meets the conditions for high speed operation but also can maintain its high performance.

3,753,518

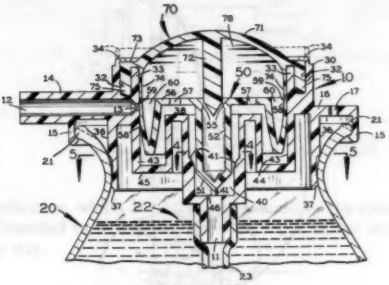
PUMP WITH FLOATING VALVE ELEMENT

Louis F. Kutik, 8720 S.W. 23 Pl., Broward, Fla.

Filed May 7, 1971, Ser. No. 141,192
Int. Cl. B67d *5/42*; A61f *13/20*
U.S. Cl. 222—383 7 Claims

The invention relates to a product dispensing pump, mountable on a container, comprising a housing, an actuator

mounted on the housing and a floating valve within the housing; when the actuator is depressed, the contents of a chamber



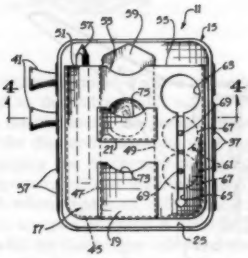
within the housing are discharged through an exhaust port; when the actuator is released, the valve slidably closes the exhaust port and opens an input to recharge the chamber.

3,753,519

GOLF ACCESSORY CARRIER

Fred Gammon, 219 Tremont Dr., Bayside Village, Newport Beach, Calif.

Filed Sept. 27, 1971, Ser. No. 183,958
Int. Cl. A45c *11/00*
U.S. Cl. 224—5 C **9 Claims**



A golf accessory carrier comprising a resiliently compressible core having a cavity therein and a case substantially completely enclosing the core. The case is constructed of flexible material and the case has an aperture in registry with the cavity of the core. The aperture and cavity are sized to partially receive a golf tee and the core is adapted to resiliently grip the portion of the golf tee in the cavity. One or more pockets for carrying various other golf accessories are provided on the case.

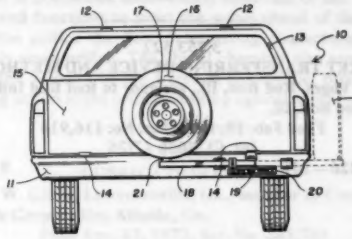
3,753,520

TWO-POSITION SPARE TIRE MOUNTING ASSEMBLY

Egbert J. Bodde, Rt. 1, Trego, Wis.

Filed Sept. 30, 1971, Ser. No. 185,149
Int. Cl. B62d *43/02*
U.S. Cl. 224—42.06 **12 Claims**

A spare tire mounting assembly is provided which is especially adapted for use with motor vehicles such as station wagons having an openable rear portion. The assembly provides for alternate storage of the spare tire either on the external rear of the vehicle or along a longitudinal side thereof. Movement of the spare tire between the two points is provided by means of an elongated supporting member pivotally



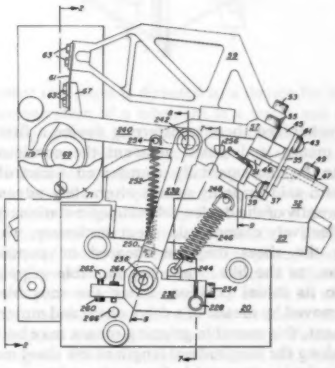
mounted to the vehicle at one end thereof and by pivotal mounting of the spare tire at the other end of the elongated supporting member.

3,753,521

INTERMITTENT HIGH SPEED PERFORATOR

Jasper S. Chandler, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 40,951, May 27, 1970, Pat. No. 3,656,384.
This application Sept. 7, 1971, Ser. No. 178,365
Int. Cl. G03b *1/22*
U.S. Cl. 226—64 **21 Claims**



An intermittent film perforator capable of operating at a shuttling and punching rate up to 12,000 perforations per minute, having a design life of 16,000 hours, and readily adapted to perforate different film formats and film widths. The heart of the perforator is a novel film shuttling mechanism having a cam and follower design which is subject to a minimum of wear and which is resiliently mounted so that it can be tuned to reduce the load of the bearings of the drive therefor.

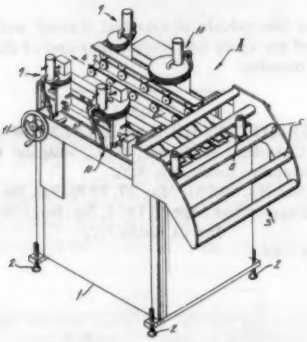
The perforator is provided with an automatic threading mechanism which will thread unperforated film to and through the punch mechanism and to the shuttle mechanism, thus eliminating the necessity of temporarily splicing the ends of a new film to the end of an expiring film or providing the end of a new film with perforations to insure its being handled by the perforator. This automatic threading mechanism intermittently advances the film to the punch and shuttle mechanism by intermittently frictionally engaging the same and advancing it in increments substantially equal to the perforation pitch and the advancing stroke of the shuttle mechanism.

Both the novel shuttle mechanism and the automatic threading mechanism of the perforator are not limited to use in perforators but can be used independently to intermittently feed motion picture film through a motion picture camera or a motion picture projector with little or no modification.

ERRATUM

For Class 226—97 see:
Patent No. 3,753,517

3,753,522
SHEET TRANSFERRING DEVICE AND METHOD
Kenneth Voges, Red Bud, Ill., assignor to Red Bud Industries, Inc., Red Bud, Ill.
Filed Feb. 19, 1971, Ser. No. 116,914
Int. Cl. B65h *17/26*
U.S. Cl. 226—141 **9 Claims**

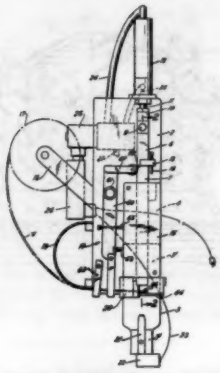


In a mechanized sheet transferring device a first movable gripping means is disposed adjacent the continuous sheet desired to be incrementally transferred forwardly of the device, with said gripping means alternately advancing said sheet forwardly of the device, whereupon a stationary gripping means effectively clamps said sheet stationary, while simultaneously the sheet may be sheared or punched by a mechanism, or the like, while the movable gripping means returns to its initial position. Since the movable gripping means is moved by means of a drive chain and motor-sprocket arrangement, this movable gripping means may be set at any position along the longitudinal length of the sheet moving surface of the device, to provide for precise advancement of the sheet material between shearing operations.

In the method of operation of this sheet transferring device, the movable gripping means alternately advances the sheet material a fixed distance, whereat circuitry energizes a stationary gripping means that clamps the sheet into fixed position, while said movable gripping means returns to its initial preset location along the sheet moving surface of the device.

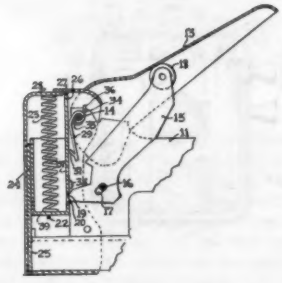
3,753,523
STAPLING MACHINE
Morris Perlman, Brooklyn, N.Y., assignor to Carbide Form Grinding, Inc., Brooklyn, N.Y.
Filed Oct. 21, 1971, Ser. No. 191,235
Int. Cl. B27f *7/10*
U.S. Cl. 227—88 **30 Claims**

A stapling machine in which a pair of punches cooperates with a die and a retractable anvil to cut off a portion of a wire fed between the die and the punches and bend the wire into a U-shaped staple, and in which a clincher cooperates with a stationary clinching anvil located below the retractable anvil to clinch the U-shaped staple about material placed on the clinching anvil. The clincher is carried by a driver bar reciprocated in lognitudinal direction and the punches are carried by a carrier bar coupled by releasable coupling means to the driver bar for movement therewith. After the punches on the carrier bar have cut off a wire portion, formed the same into a U-shaped staple and moved the staple toward the clinching anvil, further movement of the carrier bar is stopped by stop means while the coupling means are moved to an un-



coupling position so that the driver bar and the clincher thereon can continue their movement towards the clincher anvil to perform the clinching operation.

3,753,524
STAPLER DEVICE
Harold Heyward, 1194 Carol Ln., Glencoe, Ill.
Filed Feb. 10, 1972, Ser. No. 225,145
Int. Cl. B25c *5/00, 5/10*
U.S. Cl. 227—132 **9 Claims**

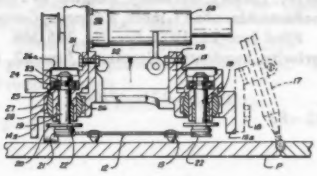


A hand-operated staple-driving tool having a multi-stage operating movement of the operating handle resulting in a first cocked position of the staple-driving mechanism achieved through the employment of a latch pin operable after a predetermined length of travel of the staple-driving mechanism by compression movement on the handle, and a positive releasing of the latch pin upon successive movement of the handle after operating the staple-driving mechanism; such construction and function requiring less compression force for each handle movement and thus resulting in easier yet effective operation of the tool.

3,753,525
PIPE WORKING CARRIAGE
Samuel J. Homes, Houston, Tex., assignor to Cre-Crose International, Inc., Houston, Tex.
Filed Aug. 2, 1971, Ser. No. 168,169
Int. Cl. B23k *5/00*
U.S. Cl. 228—29 **12 Claims**

A pipe working carriage which is adapted to travel along a track encircling the exterior of a pipe. The carriage includes a body, wheels for engaging the track, and a drive system which

engages a cylindrical surface parallel to the axis of the pipe. This abstract is neither intended to define the invention of the



application, which of course is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,753,526

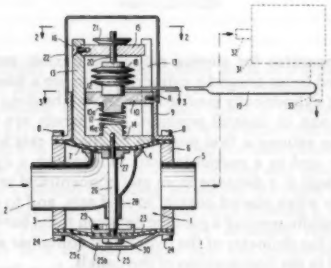
TEMPERATURE RESPONSIVE VALVE ASSEMBLY

Clarence S. Johnson, P.O. Box 940, Pomona, Calif.

Filed June 4, 1971, Ser. No. 150,080

Int. Cl. G05d *23/12*

U.S. Cl. 236—99 **4 Claims**



A temperature responsive valve assembly having a fixed disc secured to the valve body; a yoke member is slidably mounted on the disc and a compression spring is positioned on one side of the disc and biases the yoke against a diaphragm type valve urging the diaphragm to closed position. A temperature responsive bellows is mounted on the opposite side of the disc and, when expanded, moves the yoke and associated diaphragm to an open position. A counter-diaphragm is interconnected with the diaphragm valve and is adapted to move in unison therewith to thereby provide a pressure-equalizing function within the valve body during operation.

3,753,527

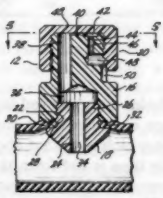
DRIP IRRIGATION SYSTEM

Lyle D. Galbraith, Redmond, and Alan R. Harvey, Bellevue, both of Wash., assignors to Rocket Research Corporation, Redmond, Wash.

Filed Aug. 6, 1971, Ser. No. 169,689

Int. Cl. B05b *17/04*

U.S. Cl. 239—11 **11 Claims**



A plurality of drip units or irrigators are attached to a plastic hose. Water flows from the hose to and through a relatively large metering orifice in each irrigator which is sized to easily pass any expected particles which are in the water. A vortex chamber is positioned immediately upstream of the metering orifice and functions to swirl the water ahead of the orifice, giving the orifice the flow determining characteristics of a relatively small orifice. The vortex chamber also serves to increase the velocity of the water at the orifice, providing an scouring action at the orifice working against algae buildup.

3,753,528

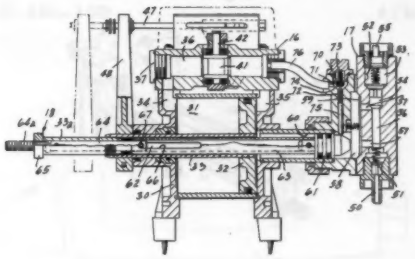
LUBRICATION SYSTEM

Gerald W. Gibbs, Lawrenceville, Ga., assignor to Consolidated Foods Corporation, Atlanta, Ga.

Filed Apr. 13, 1972, Ser. No. 243,763

Int. Cl. B05b *7/26*

U.S. Cl. 239—61 **5 Claims**



The present invention is directed to a device for insuring a proper concentration of a lubricant in a water and lubricant mixture being sprayed through spray nozzles onto moving parts such as conveyors, chain belts and trolleys, characterized by a fluid-actuated motor driving a pump which meters the lubricant into the flow of water in direct proportion to the amount of water being utilized by the system of spray nozzles to insure a constant concentration thereof. In the preferred embodiment, the motor is a reciprocating piston connected to a diaphragm pump utilizing a plunger which is adjustably connected to the piston rod of the motor to enable an adjustment in the output of the pump to vary the concentration of the lubricant in the water and lubricant mixture. Preferably, the water leaving the fluid-actuated motor and the output of the pump are mixed in a mixing chamber prior to being sprayed through the nozzle system and the speed of the motor is controlled through a pressure regulator means disposed in the waterline connected to the inlet port of the motor.

3,753,529

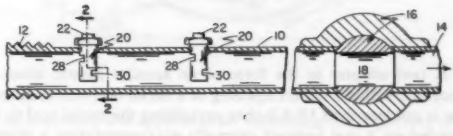
SPRAY APPARATUS

Donald Brooks Baker, Foxboro, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

Filed Jan. 26, 1972, Ser. No. 220,872

Int. Cl. B05b *15/02*

U.S. Cl. 239—110 **5 Claims**



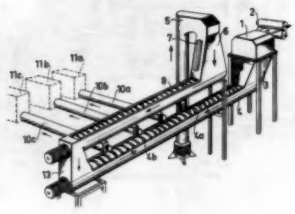
Shower apparatus has a pressure fluid conduit with spray nozzles having body portions immersed in the fluid and internal valve members movable between a spray position restricting the capacity of the spray outlet and a purge position in which such capacity is enlarged, the nozzle body portions hav-

ing inlet and outlet ports differently located in the fluid flow path in the manifold so that the valve members are shifted between spray and purge positions by pressure differential changes between the pots produced by opening and closing a conduit outlet valve to vary the fluid flow rate.

3,753,530
APPARATUS FOR CONVERTING SHEET CELLULOSE PULP TO DEFIBRATED PULP

Stig Olof Grafstrom, Bondsjo, and Nils Verner Blomqvist, Ornskoldsvik, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Division of Ser. No. 830,042, June 3, 1969, Pat. No. 3,645,456. This application Sept. 2, 1971, Ser. No. 177,475
Int. Cl. B02c *13/286*
U.S. Cl. 241—34 **10 Claims**

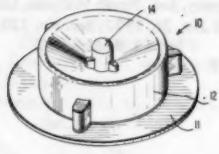


Apparatus are provided for converting sheet cellulose pulp to defibrated pulp, uniformity of the defibrated pulp stock being ensured by pooling the shredded pulp obtained from a plurality of cellulose pulp sheets, and uniformly feeding the pooled shredded pulp fibers to the disintegrators.

3,753,531
REEL ADAPTER

Tomomi Katoh, Nerima-ku, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1971, Ser. No. 205,235
Claims priority, application Japan, Dec. 15, 1970, 45/125145
Int. Cl. B65h *19/02*
U.S. Cl. 242—68.3 **2 Claims**

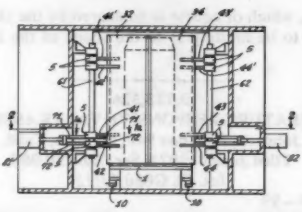


A reel adapter in the form of an annular plastic insert is received within a center opening of a metal reel whose diameter is not less than 10.5 inches permitting the metal reel to be carried on a reel support normally accommodating a plastic reel of greater thickness but of a diameter not larger than 7 inches, the reel adapter including height adjusting menas of a thickness approximating one-half of the thickness difference between the metal reel and plastic reel, the height adjusting means including at least a radially extending portion which underlies the metal reel to raise the reel above the reel support.

3,753,532
METHOD AND APPARATUS FOR STORING ELONGATED MATERIAL

Joachim Meyer, Lintorf, Germany, assignor to Frisch Kabel - und Verseilmaschinenbau GmbH, Ratingen, Germany

Filed June 22, 1972, Ser. No. 265,306
Claims priority, application Germany, June 22, 1971, P 21 30 882.7
Int. Cl. B21c *47/04*
U.S. Cl. 242—83 **4 Claims**

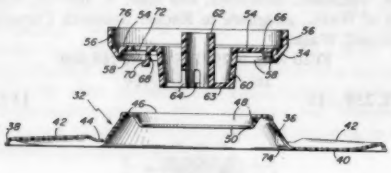


In an apparatus for storing elongated flexible material in plural coiled loops around a cylindrical core on a base plate, a plurality of cylindrically profiled panels, establishing a hollow cylinder when in coaxial position. The panels are pivotally mounted to assume a first position of coaxial relationship to each other and to a particular axis to establish a cylindrical container wall at a distance from and concentrical to the core on the base when placed coaxial to said axis, and to assume a second position opening a passage between them having width larger than the diameter of the cylindrical container wall when established in the first position of the panels.

3,753,533
TAPE REEL

George F. Lyman, Weston, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.

Filed Aug. 20, 1970, Ser. No. 65,513
Int. Cl. B65h *17/48*; B21c *47/02*
U.S. Cl. 242—55.19 A **13 Claims**



The disclosure includes an improved tape reel structure for use in a magnetic tape cartridge. The complete cartridge includes an endless tape which is wound about the tape reel and in which the magnetic tape is fed from the central portion of the tape reel and is rewound about the outer region of the reel in the usual manner. The tape reel includes two basic parts, a platform and a central cap which are connected by an improved mechanical interlock which secures the parts together and which precludes their relative rotation.

3,753,534

RESILIENTLY COMPRESSIBLE BOBBIN MADE OF PLASTIC MATERIAL

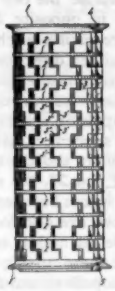
Nobutaka Ono, Nishinomiya, and Yoshibaru Nagai, Kanagawa, both of Japan, assignors to Osaka Bobbin Kabushiki Kaisha, Osaka, Japan

Filed Dec. 14, 1970, Ser. No. 97,511

Claims priority, application Japan, Dec. 25, 1969, 44/123414 (utility model)

Int. Cl. B65h *75/24, 75/10*

U.S. Cl. 242—118.11 9 Claims



A resiliently compressible bobbin made of a synthetic thermoplastic material which comprises two end rings, a plurality of intermediate rings spaced each other in parallel with and between the end rings, and a number of chair-spaced bent elements, each of which consists of two portions extending parallel to the longitudinal axis of the bobbin and secured to the rings and a portion extending parallel to the plane of the ring, interconnecting any two adjacent rings forming a tubular latticework. The bent elements are arranged regularly and uniformly in a circumferential row and connected longitudinally with each others by said intermediate rings, and bending direction of the bent elements in one circumferential row is opposite to that in adjacent circumferential rows.

3,753,535

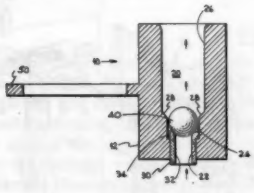
YARN TENSIONING DEVICE AND METHOD

Otto Zollinger, Spartanburg, S.C.

Filed Oct. 16, 1972, Ser. No. 297,995

Int. Cl. B65h *59/22*

U.S. Cl. 242—152.1 11 Claims



A device is disclosed for tensioning a running length of textile yarn. The device contains a yarn passageway made up of three sections, each section having a progressively larger diameter from the inlet end of the device. A small diameter section at the entrance end of the device has a seat adjacent the inner end thereof which receives a spherical element. The medium diameter section surrounds the seat and retains the spherical element therein. The larger diameter section of the passageway is sufficiently large to enable pressurized air to pass around the spherical element without forcing the element out the end of the passageway. The wall adjacent the junction of the large and medium diameter sections is tapered so as to permit ready return of the spherical element to the medium diameter section to reside on the seat. Mounting means are also provided for securing the device to a yarn handling machine. A method for tensioning yarn is also disclosed and claimed herein where the yarn passes through the three sections of the yarn passageways and is engaged in the medium diameter section by the spherical element so as to impede the progress thereof while the spherical element is retained against lateral movement.

3,753,536

SPACE VEHICLE COUPLING MECHANISMS

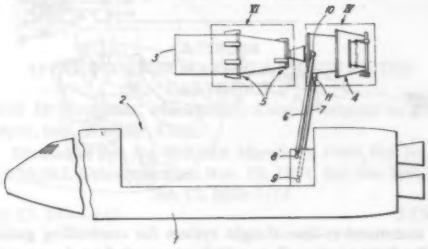
Neville White, Portishead, England, assignor to British Aircraft Corporation Limited, London, England

Filed Sept. 29, 1971, Ser. No. 184,817

Claims priority, application Great Britain, Oct. 2, 1970, 46,917/70

Int. Cl. B64g *9/00*

U.S. Cl. 244—1 SD 6 Claims



A mechanism for the coupling of one space vehicle to another includes a coupling means on each vehicle, each coupling means having a primary engagement device and a secondary engagement device so positioned and axially spaced prior to coupling of the vehicles that engagement and locking is achieved firstly only by the two primary engagement means and, subsequently, on altering the axial spacing between the primary and secondary engagement means on one vehicle, by the two secondary engagement means.

3,753,537

METHOD AND APPARATUS FOR STABILIZING THE TRAJECTORY OF A REACTION-PROPELLED MISSILE

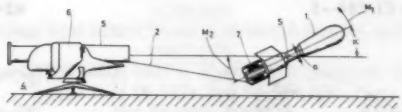
Gunther Karpa, Ottobrunn, and Helmut Schmidt, Munich, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Oct. 6, 1970, Ser. No. 78,447

Claims priority, application Germany, Oct. 9, 1969, P 19 50 930.9

Int. Cl. F42b *15/04, 13/56;* F41g *7/02*

U.S. Cl. 244—3.12 4 Claims



In a method and apparatus for stabilizing the trajectory of a reaction-propelled missile, tensile forces are exerted at the stern of the missle through a single tensile member connected to the stern, the tensile forces, at angles of incidence of the missile differing from zero, producing moments which rotate the missile back about its center of gravity. The single tensile member, at its connection with the missile, is wound on a coil

at the stern of the missile, and this coil has an axis of rotation coinciding with the longitudinal axis of the missile. The single tensile member may be the cable for transmitting guiding signals to the missile, although the tensile member may be independent of this cable.

3,753,538

VEHICLE COMMAND SYSTEMS

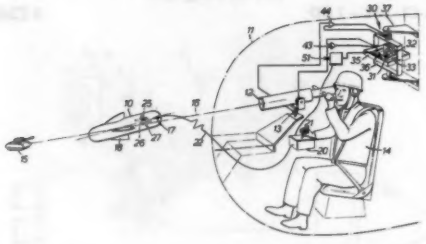
Michael Martin Marsh, Biggleswade; Geoffrey Thompson, Letchworth, and Brian Thomas Trayner, Hitchin, all of England, assignors to British Aircraft Corporation Limited, London, England

Filed May 12, 1971, Ser. No. 143,714

Claims priority, application Great Britain, May 18, 1970, 24,018/40

Int. Cl. F41g 7/02, 7/10, 9/00

U.S. Cl. 244—3.12 **9 Claims**



A command-to-line-of-sight system for controlling guided missiles from an aircraft, in which a two-axis free gyroscope is mounted in the controlling aircraft and maintained as an analogue of a directional reference gyroscope carried in the missile, the analogue gyroscope being mounted in a free gimbal system whose outer free gimbal is pivotally supported by a pair of controlled gimbals. The controlled gimbals are driven by servo mechanisms in response to position signals derived from an optical sight in the controlling aircraft so that the roll axis of the analogue gyroscope is maintained approximately parallel to the line of sight. A compensating signal derived from the analogue gyroscope and representative of roll of the controlling aircraft is supplied to the command signal transmitter in the controlling aircraft and is employed to correct the transmitted command signals so as to compensate for misalignment between the attitude axes of the controlling aircraft and the axes of the missile directional reference system. Alternatively the signal derived from the analogue gyroscope may be employed to maintain the optical image produced by the sight in a fixed attitutde relatively to the aircraft despite roll of the aircraft.

3,753,539

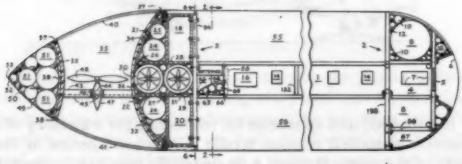
BALLOONED, VTOL AIRCRAFT

Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss.

Filed Mar. 15, 1971, Ser. No. 124,001

Int. Cl. B64b 1/00

U.S. Cl. 244—5 **42 Claims**



An aircraft capable of vertical or nearly vertical takeoff and landing, with cabin structure and aerostatic means (one or a plurality of balloons) having a center of lift at or near the longitudinal axis of the cabin and in-flight-forward of the craft's center of gravity. In ordinary or emergency landing this position of the lift center forces the craft to assume an upright position and it lands on a cushion at the stern. Rearward of the cabin and strongly attached to it there are two attitude-controlling fan means: (1) a stern-elevating propeller with its propeller disk approximately in the horizontal plane containing the cabin's fore-and-aft axis, for lifting the heavier stern of the craft and after takeoff moving the axis into or toward a substantially horizontal position; and (2) propulsive means in the stern portion for steering the craft to the right or left. This steering means may comprise: the two tube-contained fans of FIG. 1, having thrusts in opposite directions; or a single propeller having either reversible-pitch blades or fixed blades that provide thrust in either direction and are driven by a reversible motor. A pair of oppositely-rotating main propellers provide lift for the vertical or nearly vertical craft in takeoff or landing and forward propulsion when it is horizontal. In vehicles for travel mostly in space rockets may be substituted for both the attitude-controlling and the main propellers. In the forms of FIGS. 1, 2, 21 and 22, the main propellers are on short wings that jut thru spaces between balloons; and in these spaces doors and windows are also located. But in FIG. 19: balloons entirely encircle the middle cabin part (optionally a single balloon may be here used); rockets or turbojets preferably are used as propellers; and the only doors and windows are in the forward and rear cabin parts. The craft may be slightly heavier than air, but optionally it may be lighter than air, with main propellers of reversible pitch or controllable-direction rockets. Lightness of weight is an important part of the combination; and the cabin frame comprises tubular members, preferably containing helium.

3,753,540

NOSE WHEEL STEERING

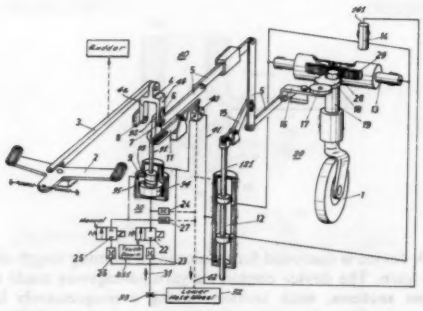
Eckard Renner, Achim, Germany, assignor to Vereinjgte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

Filed Oct. 5, 1970, Ser. No. 77,806

Claims priority, application Germany, Oct. 17, 1969, P 19 52 348.9

Int. Cl. B64c 25/50

U.S. Cl. 244—50 **8 Claims**



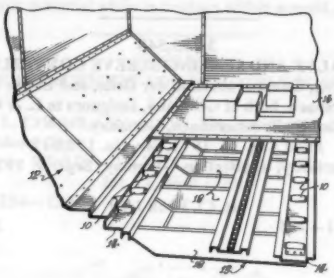
The nose wheel of an aircraft is gradually made steerable after touchdown by the rudder pedal in that gradually the power on the servo system (steering momentum) is increased from zero to full value, while concurrently the steering range is increased.

3,753,541

CARGO ROLLER ASSEMBLY

Randall A. Grueber, Los Altamitos, and Robert A. Warren, Long Beach, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Sept. 2, 1971, Ser. No. 177,361
Int. Cl. B64d 9/00
U.S. Cl. 244—137 R 7 Claims



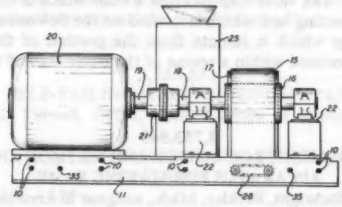
A roller assembly for use when a high strength to weight ratio is required. The assembly includes a roller shell with internal stiffening ribs and a crown of a predetermined curvature. The shell is swaged over hubs at each end thereof, the hubs including low friction bearings for connection to a roller shaft.

3,753,542

MACHINERY BASE WITH SLIDABLE CARRIAGE HAVING SLUE COUNTERACTING MEANS

Jerome J. Sloyan, c/o Automatic Motor Base Co., Windsor, N.J.

Filed June 16, 1971, Ser. No. 153,622
Int. Cl. F16m 11/04
U.S. Cl. 248—23 2 Claims



A machinery base having a slidable carriage movably responsive to tension variation of a belt at one side thereof between driving and driven pulleys, is provided with means automatically activating the sliding impulse simultaneously to the other side of the carriage remote from the pulley side thereof so the carriage will be impelled evenly at both sides thereof, thereby eliminating tendency of the carriage to slue.

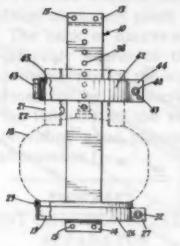
3,753,543

BRACKET FOR GAS CONTAINERS

Wayne R. Burrell, Golden Valley, and Richard P. Burrell, Stillwater, both of Minn., assignors to Burrell Bros., Inc., Coon Rapids, Minn.

Filed Nov. 19, 1971, Ser. No. 200,294
Int. Cl. A62c 33/00
U.S. Cl. 248—313 5 Claims

A bracket for rigidly supporting and mounting containers for compressed and liquefied gases such as refrigerant gases, fuel gases, and the like. The bracket is especially adapted for mounting spare containers of refrigerant gas for over-the-road trucks and trailers. The bracket is of simple sturdy construction permitting easy placement and removal of the gas container in the bracket. At the same time, the gas container is held securely so as to avoid vibration. The bracket is adjustable to accommodate gas containers of different sizes.

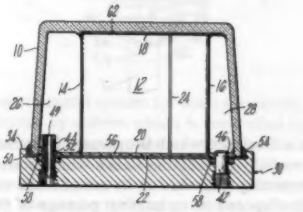


3,753,544

APPARATUS FOR MAKING A LIQUID FILTER CARTRIDGE

David H. Hodgkins, Manchester, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Division of Ser. No. 809,059, March 10, 1969, Pat. No. 3,630,382. This application Nov. 19, 1971, Ser. No. 200,292
Int. Cl. B29c 1/14
U.S. Cl. 249—141 3 Claims



A ported mold having a peripheral lip is positioned in a backing mold having mold pins centrally disposed in the ports and having recesses surrounding the mold pins. The recesses are filled when a layer of flowable plastics material is placed in the ported mold. The lip of a filter housing is positioned in the ported mold and, with the curing of the plastics material, the ported mold becomes a part of the filter and ported abutments forming an inlet and an outlet for the filter are provided. The mold pins may be of different lengths so that the ports may be open, or sealed by a thin layer of plastics material.

3,753,545

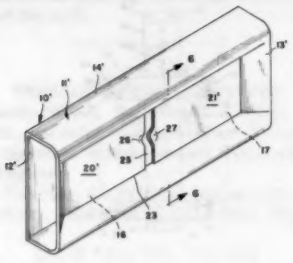
CONNECTOR STRUCTURE FOR MOLD FORMS AND THE LIKE

William J. Stegmeier, 1021 C Shary Circle, Concord, Calif.

Filed June 18, 1971, Ser. No. 154,290
Int. Cl. E04g 17/00
U.S. Cl. 249—219 R 6 Claims

A connector structure for releasably interconnecting successive mold forms or the like. The connector structure comprises a generally tubular sleeve that is hollow from end to end thereof and dimensioned to slidably receive the end portions of two successive moldboards inserted thereinto from opposite ends. The extent to which such moldboards are insertable into the connector structure is defined by stop means projecting thereinto and the moldboards are tightly held by fric-

tional grippers accommodating boards of various thickness while preventing sagging so that the upper edges of the boards can be used for grading purposes. The connector structure has



sufficient flexibility in the longitudinal direction to permit the mold comprising the same to be curved in arcuate contours required by any particular installation.

3,753,546

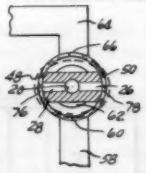
SLEEVE VALVE

Bernard R. Teitelbaum, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sept. 2, 1971, Ser. No. 177,240

Int. Cl. F16k *7/06*

U.S. Cl. 251—9 **15 Claims**



A valve is disclosed which is operated by means of an externally and radially deflectable sleeve which controls fluid flow by not permitting fluid flow in its undeflected state through a valve body disposed in an internal passage of the sleeve, and permitting fluid flow therethrough in its deflected state by blocking and unblocking valve ports in circumferentially spaced protuberance formed in the valve body member to thus provide the valving function without an operator extending from the ambient region into the valving chamber.

3,753,547

LIQUID VALVES

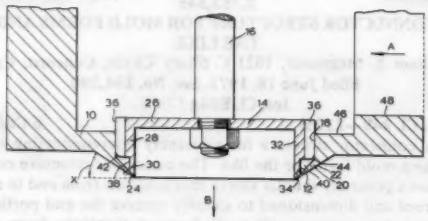
Michael Johnston Topham, Sale, England, assignor to English Calico Limited, Manchester, England

Filed Mar. 22, 1972, Ser. No. 236,951

Claims priority, application Great Britain, Mar. 27, 1971, 8,192/71

Int. Cl. F16k *47/00*

U.S. Cl. 251—120 **11 Claims**



The invention concerns valves of the type for downwardly delivering liquid from a liquid store and which comprise a valve body bearing an annular valve seat and a circular closure member, the closure member and the valve body being relatively displaceable for opening and closing of the valve. In order for the valve operation to be substantially drip-free, the lowermost rim of the valve body and the lowermost rim of the closure member each comprise a respective knife edge which, when the valve seat and closure member are in their closed position, mate together to define a composite, depending knife edge.

3,753,548

PIVOT VALVE AND SEALING SLEEVE CONSTRUCTION

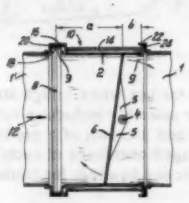
Richard Jung, Gummersbach in der Delle, and Eugen Markus, Gummersbach, both of Germany, assignors to L. & C. Steinmuller GmbH, Gummersbach, Germany

Filed Aug. 16, 1971, Ser. No. 172,017

Claims priority, application Germany, Sept. 9, 1970, P 20 47 413.8

Int. Cl. F16k *1/22*

U.S. Cl. 251—305 **2 Claims**



A device for sealing a duct includes a sleeve made of a deformable material which is secured in the duct passage in a manner such that it forms an annular space with the interior wall of the passage. The assembly includes a pivoted flap which is journaled in a side bearing of the duct and the size of the flap is such that it moves into a wedging sealing engagement with the deformable insert. The inner circumference of the insert is slightly smaller than the circumference of the valve flap. The valve flap includes a shaft which is supported on a connecting web which is located on the downstream side of the flap which is remote from the portion of the insert which is secured within a recess of the outer wall of the conduit.

3,753,549

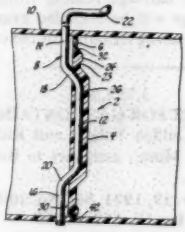
FLOW CONTROL DEVICE AND METHOD AND APPARATUS FOR MAKING SAME

Phillip L. Rubright, Berkley, Mich., assignor to Arco Industries Corporation, Detroit, Mich.

Continuation of Ser. No. 146,369, May 24, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 314,063

Int. Cl. F16k *1/22*

U.S. Cl. 251—305 **22 Claims**



A flow control device including a main body portion of rigid, plastic material, and a sealing portion of elastomeric

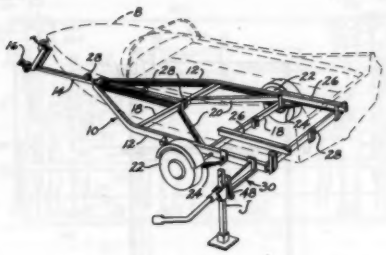
material integrally bonded to the main body portion and projecting outwardly from the periphery thereof. Mounting means in the form of a pivot rod is molded to the main body portion for pivotally supporting the device in a duct or the like such that the peripheral elastomeric material is in resilient sealing engagement therewith. The integral bond between the elastomeric material and the main body portion is achieved by simultaneously finally curing the elastomeric material and the rigid plastic material while in contact within a mold.

3,753,550

FRAME ATTACHMENT FOR REMOTELY POSITIONED JACKS

Richard L. Criswell, Leisure City, Fla., assignor to Afton Eloff, Jr., Toledo, Ohio

Filed Dec. 27, 1971, Ser. No. 212,392
Int. Cl. B66f *13/00*
U.S. Cl. 254—133 **3 Claims**



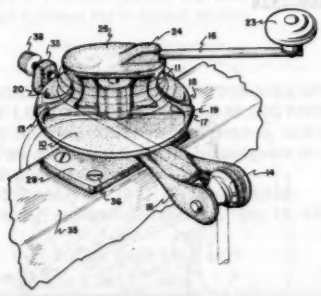
An attachment for connecting remotely positioned jacks to the frame of a land vehicle having an inwardly turned bottom flange. The attachment generally comprises: a C-shaped hook on one end of an arm for confining an inwardly turned bottom flange of the vehicle's frame, a downwardly turned jack retaining lip at the opposite end of the arm, an abutment for engaging the outer surface of the frame, and a stiffening web between the abutment and the jack retaining lip.

3,753,551

SELF-TAILING MULTI-SIDED CAPSTAN

Arland J. Tidwell, Orem, Utah, assignor to Startek, Provo, Utah

Filed May 5, 1972, Ser. No. 140,339
Int. Cl. B66d *1/30*
U.S. Cl. 254—150 **11 Claims**



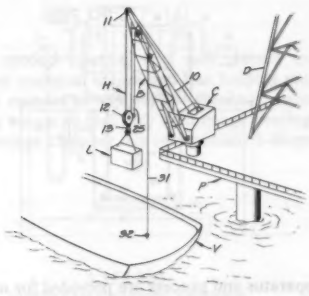
A self-tailing, multi-sided capstan for manual or power operation is disclosed. A multi-sided capstan particularly adaptable for detachable vertical mounting on the gunwales or deck of a boat comprises a disc-like base member and a multi-sided web extending vertically therefrom to provide a rotating unit which may be cranked by hand or power operated to haul-in anchors or handle lines on a sailboat. The multi-sided web member preferably having two elongated sides with opposed concave end surfaces wherein the concave surface is preferably asymmetrical about any plane parallel to the disc-like base member. The neck or narrowest dimension of the web member is preferably nearer to the top of the web member than to the intersection of the web member with the base. The edges formed by the intersection of the concaved end surfaces with the flat sides of the web are only slightly rounded, thereby providing good gripping action on a line turned about the web member.

3,753,552

DISPLACEMENT CONTROL SYSTEM FOR HOIST APPARATUS

Charles D. Barron, Huntington Beach, Calif., assignor to Fyron Jackson Inc., Long Beach, Calif.

Continuation-in-part of Ser. No. 19,564, March 16, 1970, abandoned. This application Mar. 25, 1971, Ser. No. 127,892
Int. Cl. B66d *1/48*
U.S. Cl. 254—172 R **2 Claims**



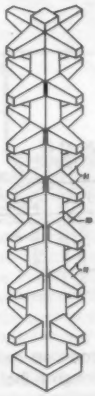
A displacement control system for hoist apparatus, in which the winch is driven by a drive which is controlled by a pneumatic signal derived from a pressure controller, the controller output pressure signal being determined by comparing in a computing pneumatic relay variable signals derived from a relative motion responsive reference sensor, a load position sensor, and a speed sensor.

3,753,553

TOPPLE TOWER

Robert B. Bockting, 8510 Pelham Rd., Bethesda, Md.

Filed Nov. 17, 1971, Ser. No. 199,592
Int. Cl. F04h *12/12*
U.S. Cl. 256—1 **3 Claims**



My invention relates to military engineering. More specifically, it concerns obstacles and barriers designed to halt or

delay the advance of hostile military forces. My invention is designed primarily to stop or impede tanks and other armored vehicles, but it also incorporates antipersonnel features. Its main advantage lies in that it is especially suited for construction in peacetime since it requires very little maintenance, poses no danger to inhabitants and negligible inconvenience to normal peacetime movement or economic use of real estate in the area in which employed. It is designed to be quickly converted into an obstacle which is superior to types currently in use or planned.

3,753,554

APPARATUS FOR MAKING POLYURETHANES

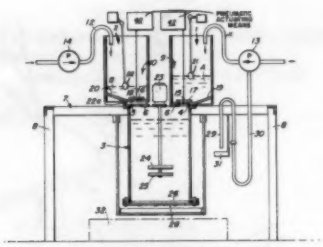
Gerhard Muller, Munich, and Hermann-Josef Raffenberg, Selm Kr. Ludinghausen, both of Germany, assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 31, 1971, Ser. No. 176,508

Claims priority, application Germany, Oct. 30, 1970, P 20 53 435.4; Jan. 22, 1971, P 21 02 978.7

Int. Cl. B01f *7/18, 15/02*

U.S. Cl. 259—8 **6 Claims**



An apparatus and process are provided for making a series of batches of foamable polyurethane reaction mixture wherein flushing of the apparatus between each batch is with one of the components used to prepare the reaction mixture.

3,753,555

CARBURETORS

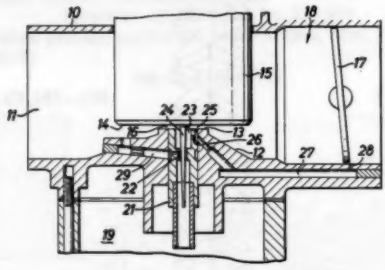
Geoffrey Lloyd Lawrence, Middlesex, Stanmore, England, assignor to The Zenith Carburetter Company Limited, Middlesex, England

Filed June 4, 1971, Ser. No. 150,096

Claims priority, application Great Britain, June 8, 1970, 27,627/70

Int. Cl. F02m *19/06*

U.S. Cl. 261—44R **6 Claims**



A carburetor of the constant depression type in which liquid fuel is supplied through a fuel metering orifice into a throat defined in the induction passage by an air valve. The effective area of the fuel metering orifice is controlled by a profiled needle carried by the air valve. A transfer passage communicates through a port at one end with the induction passage downstream of the throttle valve when the throttle valve is closed, and, at the other end, with the fuel supply passage between the orifice and the throat through a cavity and a restricted passage. Thus some of the fuel passing through the orifice is passed into the induction passage downstream of the throttle valve when the latter is closed. Air can be drawn from upstream of the throat and mixed with the fuel in the fuel metering orifice to produce an air/fuel emulsion. Air can be fed from a point in the induction passage upstream of the throat and fed to the transfer passage, and valve means may be provided to enable adjustment of the rate of flow of such air fed to the transfer passage.

3,753,556

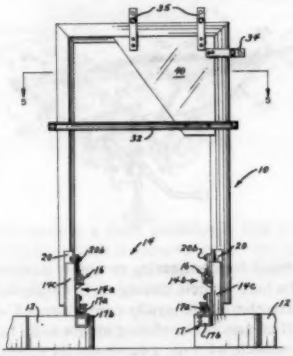
DOOR JAMB JIG

William R. Nix, 200 S. Tekappel Ave., Evansville, Ind.

Filed Nov. 10, 1970, Ser. No. 88,312

Int. Cl. B25b *1/02*; E04f *21/00*

U.S. Cl. 269—97 **6 Claims**



A jig for setting a door frame characterized by oppositely facing and similarly arranged sections defining frameworks on opposite sides of the door frame and including provisions for positioning the jig and, hence, the door frame without the need of auxiliary props.

3,753,557

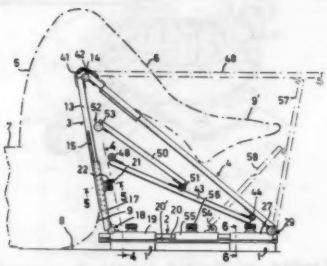
SUPPORT FOR LEG DURING KNEE SURGERY

Edward Thomas Kelley, 350 Parnassus Ave., San Francisco, Calif.

Filed Sept. 3, 1971, Ser. No. 177,636

Int. Cl. A61g *13/00, 7/06*

U.S. Cl. 269—328 **3 Claims**



A device, including a base, adapted to be adjustably and removably secured on a horizontally disposed operating table. An upwardly inclined support will support the leg bent at an

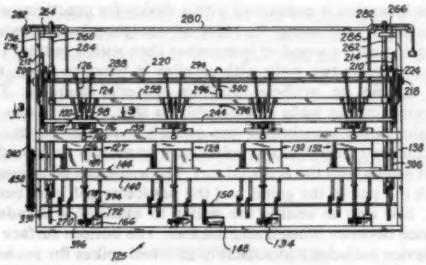
angle, preferably less than 45° at the knee, with the knee elevated and both the upper and lower legs in a substantially vertical plane and free from obstruction to clear visibility, and access to the lateral sides of the knee, and also free from obstruction to lateral movement of the leg. The support is also adjustable as to height and to the angle at which the leg may be bent and supported, and to a position in which the leg is supported with the foot elevated to operating level for foot and ankle surgery.

3,753,558

SHEET-FOLDING MACHINE

Irving Sheroff, Brooklyn, and Howard W. Berwanger, Bronx, both of N.Y., assignors to Delfold Corporation, New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,813
Int. Cl. B65h *45/18*
U.S. Cl. 270—67 **12 Claims**



A sheet-folding machine for providing a sheet with a V-folded portion and with pleats situated between the V-folded portion. The machine includes a pair of rolls for feeding and simultaneously creasing a sheet while the latter is advanced by the rolls along a predetermined feed axis located in a predetermined feed plane extending between the rolls parallel to the axes thereof. A folding assembly is provided for folding a V-fold in a sheet, and this folding assembly includes an outer pair of sheet-supporting plates situated equidistantly from the feed plane as well as a pair of inner folding plates inclined inwardly toward the feed plane to be received between the outer plates so as to form a V-fold in a sheet while the latter is advanced toward the rolls. A pair of pleating members are situated at least temporarily in the space between the outer plates on opposite sides of a pleating plane which contains the feed axis and is normal to the feed plane for forming side pleats in a sheet simultaneously with the formation of a V-fold therein. Thus, the sheet which is folded and creased by the rolls will have not only a V-folded portion but also at least a pair of pleats situated between the V-folded portion.

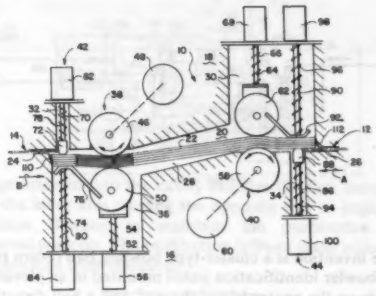
3,753,559

INTERMEDIATE STORAGE STATION MEANS FOR SHEET-LIKE INFORMATION BEARING MEDIA

Jurgen Ries; Manfred Keck; Heinz Streicher, and Manfred Leutwein, all of Stuttgart, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1972, Ser. No. 253,120
Claims priority, application Germany, May 15, 1971, P 21 24 230.8
Int. Cl. B65h *1/04, 1/06*
U.S. Cl. 271—3 **7 Claims**

In apparatus for transporting sheet-like information bearing media along a feed path between first and second stations to an utilization station there is disclosed intermediate storage station means disposed along said feed path for storing a plurality of such media. The storage station means includes a storage chamber having first and second openings on either side thereof disposed in a plane coincident with the feed path. First and second transport means are respectively provided substantially adjacent said first and second openings for transporting information bearing media into and out of said storage chamber through said first and second openings. First and second holding means are provided respectively disposed between said first opening and said first transport means and



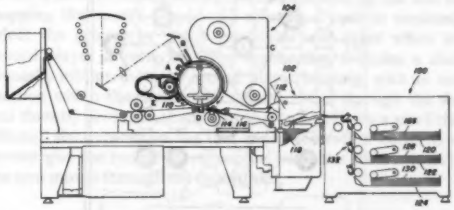
between said second opening and said second transport means. The first transport means and first holding means are staggered with respect to the second transport means and second holding means so that they hold image bearing media stored in the storage chamber in a substantially S-shaped bent configuration.

3,753,560

AUXILIARY SHEET FEEDER

John J. Kapral, Union Hill, N.Y., and Thomas E. Coggin, Greensboro, N.C., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1972, Ser. No. 214,039
Int. Cl. B65h *3/44, 5/26*
U.S. Cl. 271—9 **3 Claims**



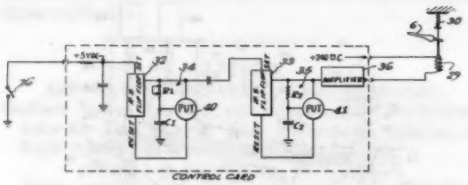
Sheet feed apparatus for an automatic copy machine in which a plurality of tray members each support a corresponding stack of sheets of differing characteristic. A vertical transporter arranged at the delivery end of sheet tray members defines a common exit path leading to a paper tray of a copy machine and copy processing stations. A sheet feed roll associated with each of the stacks engages the topmost sheet thereof in response to electrical signals. A control circuit supplies electrical signals to the appropriate sheet feed roll to feed automatically a preselected number of sheets from a one of the stacks toward the common exit path, then a preselected number of sheets from another of the stacks, and so forth. When all of the desired sheets are in the paper tray of the copy machine, it is automatically activated for transport of the sheets past copy processing stations.

3,753,561

CLUSTER BALL RACK WITH BALL DIRECTOR

Richard Szymanski, and Patrick J. Murphy, both of Muskegon, Mich., assignors to The Brunswick Corporation, Skokie, Ill.

Filed Sept. 29, 1971, Ser. No. 184,669
Int. Cl. A63d 5/02
U.S. Cl. 273—49 4 Claims



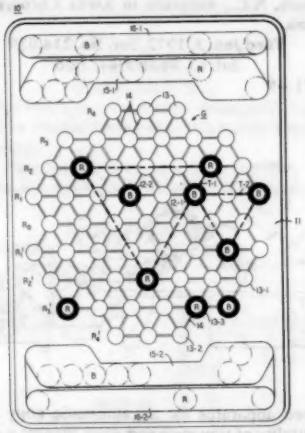
The invention is a cluster-type bowling ball return rack having a bowler identification panel mounted in an elevated position above the center island thereof, and a ball directing vane directing returning balls to the side of the cluster rack corresponding to the lane upon which the ball was bowled. A control mechanism for the vane includes timer and operating circuits employing RS flip-flop memory latches in conjunction with programmed unijunction transistors to swing the vane against spring pressure.

3,753,562

PATTERN RECOGNITION BOARD GAME STRUCTURE

Kenneth C. Knowlton, 801 Belvidere Avenue, Plainfield, N.J.

Filed Aug. 17, 1971, Ser. No. 172,469
Int. Cl. A63f 3/00
U.S. Cl. 273—130 F 10 Claims



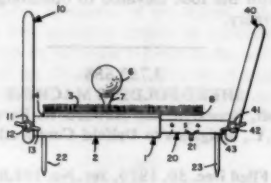
A structure for playing a pattern recognition game. The structure includes a playing board with apertures that are symmetrically distributed in a grid and are interconnected by guide marks. The overall outline of the grid is a six-sided geometric figure with its corners eliminated. Playing pieces such as marbles are placed in selected apertures of the board to form equilateral triangles that are outlined by the guide marks and capture opposing playing pieces that are included in and within triangles thus formed. The elimination of the corner apertures of the six-sided grid prevents any player from easily establishing a dominant position on the board.

3,753,563

GOLF PRACTICE DEVICE

John R. Previte, Jr., 1793 Curtner Ave., San Jose, Calif.

Filed Aug. 17, 1972, Ser. No. 281,584
Int. Cl. A63b 69/36
U.S. Cl. 273—186 C 10 Claims



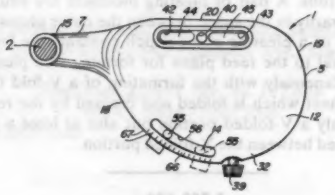
The invention is concerned with a device for practicing and improving a golf swing. Its most advantageously used when practicing with a wood or iron rather than with a putter. The device features two walls with an alley in between them, the alley having an artificial turf-like material thereon. The separation of the walls is adjustable so that the walls can be brought closer together as the golfer's swing improves. At least the wall closest to the golfer may be rotated to form different angles with the artificial turf. The angle can be adjusted to suit the size of the golfer and the particular golf club being used, and also to enable the golfer to establish a standard distance between himself and the ball. The bottom surface of the device includes two rotatably attached spikes for anchoring the device in the ground. The spikes may be rotated relative the bottom surface and fitted into depressions which include constrictions for holding the spikes in storage positions.

3,753,564

PRACTICE GOLF CLUB

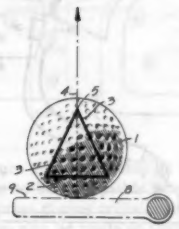
John R. Brandell, 1527 Sequoia Trl., Glenview, Ill.

Filed Mar. 27, 1972, Ser. No. 238,179
Int. Cl. A63b 69/36
U.S. Cl. 273—186 A 15 Claims



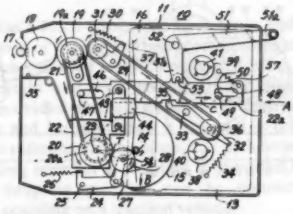
The top surface of a golf club head includes a first lens adjacent the striking face and a second lens adjacent the rear of the club head. A small battery-energized light bulb is positioned below the first lens. The second lens is located in the remote end of a light transmitting cylinder which has its other end positioned adjacent the light bulb. The light transmitting cylinder is mounted so that it may be moved to various positions along an arcuate path generally parallel to the rear surface of the club head. The light beam transmitted upwardly by each lens may be used by a golfer to provide information relating to the position of the club striking face during practice swings. The sole plate of the club head is removably mounted to permit the weight of the club head to be varied. To permit access into the interior of the club head, the head is made in two parts, the upper one of which is bolted to the lower part.

3,753,565
GOLF BALL
Marion A. Baker, 270 Mountain Ave., Piedmont, Calif.
Filed Apr. 10, 1972, Ser. No. 242,618
Int. Cl. A63b *43/00*
U.S. Cl. 273—213 2 Claims



A direction indicator on a golf ball consisting of a triangle the bisecting line of which is on the circumference of an intersecting diametrical plane of the golf ball, the sides of said triangle being concave, curved inwardly of the triangle and each side being of a length equal to about one-fourth of the circumference of said diametrical plane so as to appear as straight sides to a player viewing the golf ball from directly above said triangle; in a modified form the base of the triangle and the bisecting line are utilized.

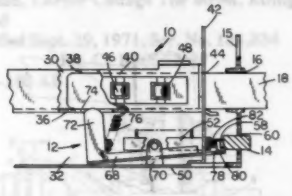
3,753,566
CASSETTE ADAPTER
Ichiro Yoshida, Kanagawa-ken, Chigasaka-City, Japan, assignor to Maruko Co., Ltd., Okaya-City, Japan
Filed July 6, 1971, Ser. No. 159,638
Claims priority, application Japan, Sept. 12, 1970, 45/79662; Jan. 26, 1971, 46/2215
Int. Cl. G11b *15/18*
U.S. Cl. 274—4 G 6 Claims



A cassette adapter comprises a casing for receiving a tape cassette, a driving pinch roller which is rotated by a rotational force transmitted thereto from a capstan provided on a tape driving apparatus, and a driven capstan shaft which enters a loaded tape cassette and is positioned inside of the tape. The driving pinch roller is pressed against the driven capstan shaft through the tape and causes the capstan shaft to drive and rotate thereby advancing the tape. When the tape has stopped running, the driving pinch roller is displaced due to increase of friction between the driving pinch roller and the tape and moves away from the capstan shaft.

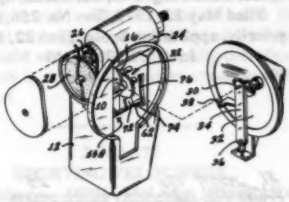
3,753,567
RECORD MECHANISM FOR A TAPE PLAYER
Victor E. Church, Park Ridge, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 1, 1971, Ser. No. 111,386
Int. Cl. G11b *23/00*
U.S. Cl. 274—4 B 6 Claims

A locking mechanism for the pushbutton selector used in choosing the mode of operation of a cartridge type tape player-recorder includes a pivotal lever arm, one end of which extends into a cartridge receiving cavity for engagement with a cartridge inserted thereinto and the other end of which is positioned for engagement with the pushbutton selector. A



cartridge inserted into the cavity engages the first mentioned end of the lever arm causing the opposite end to engage the pushbutton thereby to maintain the pushbutton in a preselected position. The pushbutton is freed upon withdrawal of the cartridge from the cavity.

3,753,568
RECORD PLAYBACK APPARATUS
Gordon H. Buck, Torrance, and Jackie L. Nolan, Lawndale, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed May 5, 1969, Ser. No. 821,772
Int. Cl. G11b *25/06*; A63h *3/33*
U.S. Cl. 274—11 R 2 Claims

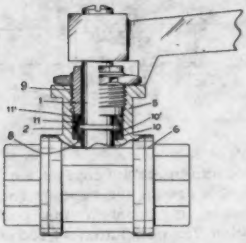


A record player with an endless record tape or band carrying several parallel sound tracks and a slot therein at the end of the tracks, including a mechanism operated by the slot for stopping the record player and rotating a cam to randomly select the groove in which the stylus will enter when the record player is restarted. The mechanism includes a shaft pivotally mounted on the record player housing, with an arm thereon which lies against the tape to move through the slot and thereby pivot the shaft. The shaft also carries a pawl that "flicks" the cam and a lug that separates switch contacts to de-energize the record player motor, when the shaft rotates as the arm moves through the record slot.

3,753,569
PRESSURE VALVE FOR FLUIDS
Agostino Bonomi, Via S. Giovanni 3, Polaveno (BS), Italy
Filed Aug. 9, 1971, Ser. No. 170,217
Claims priority, application Italy, Mar. 23, 1971, 5125 A/71
Int. Cl. F16k *41/04*; F16j *15/18*, *15/34*
U.S. Cl. 277—112 6 Claims

In a pressure valve improved sealing means are provided by a collar that is formed integrally with the valve shaft, the collar having two transverse, axially spaced apart surfaces that are smooth and parallel with respect to each other. The first one of a first pair of frusto-conical gaskets are secured to the shaft for rotation together therewith and in abutment with one of the transverse surfaces of the collar. The second one of the first pair of frusto-conical gaskets is secured internally of the sleeve in which the valve shaft is mounted. The inclined surfaces of the first pair of frusto-conical gaskets are in sliding

contact with each other. A second pair of frusto-conical gaskets is positioned, in a similar manner on the opposite transverse surface of the valve collar. As with the first pair of frusto-conical gaskets, the second pair is secured respectively to the shaft and to the body of the valve. The inclined surfaces



of the second pair of frusto-conical gaskets are also in sliding contact with each other. In the embodiment illustrated in the drawing the inclined surfaces of each pair of gaskets is at an equal and opposite angle to the other. Preferably the gaskets are made of a low friction, resilient material.

3,753,570

LOCKING HEAD

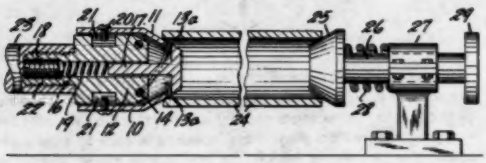
Arcadio Espasa, Calle Peligro 40, Barcelona, Spain

Filed May 23, 1972, Ser. No. 256,100

Claims priority, application Spain, June 22, 1971, 393080

Int. Cl. B23b 31/40

U.S. Cl. 279—2 **10 Claims**



A movable locking head which includes a hollow housing having a tapered end for engaging an annular member and containing an actuator which moves two or more locking arms mounted thereto through openings in the tapered end of the housing into locking engagement with the inner periphery of the annular member.

3,753,571

SAFETY SKI BINDING

Ernst Gertsch, Wengen, Bern, and Ulrich Gertsch, Matten, Interlaken, Bern, both of Switzerland, assignors to Gertsch, A.G., Wengen, Lauterbrunnen, Switzerland

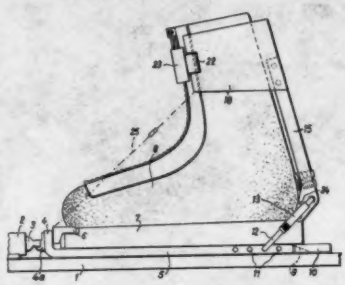
Filed Nov. 6, 1970, Ser. No. 87,404

Claims priority, application Switzerland, Nov. 10, 1969, 16697/69; Aug. 6, 1970, 11856/70

Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 K **16 Claims**

A safety ski binding incorporates a release plate detachably connected with the associated ski and secured to the ski boot. A reinforcement element for the ski boot is arranged at the release plate. The reinforcement element is pivotably supported at its lower region to the release plate and the heel of the ski boot for movement about a transversely extending axis. Furthermore, the upper region of the reinforcement element at the area of the shoe upper is provided with at least one stiff



side portion nesting against the ski boot and by means of which the upper of the ski boot is afforded lateral support.

3,753,572

HEEL GRIPPING DEVICE FOR SKI BINDINGS

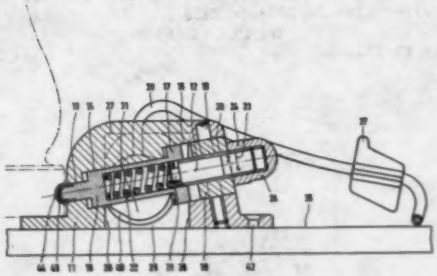
Kurt Labor; Kletrich Grunau, both of Markdorf, and Gustav Tarant, Beuerberg, all of Germany, assignors to Peter Muller, Oy, Germany

Filed Jan. 31, 1972, Ser. No. 222,133

Claims priority, application Germany, Jan. 29, 1971, P 21 04 167.8

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T **10 Claims**



A heel gripping device for a ski binding comprises a housing attachable to the ski and carrying a slidable element which is urged forwardly by a spring to project from the housing and engage a groove in the heel of the ski boot to hold the same against the ski in a downhill skiing configuration. A rotatable cam is mounted in the housing and is turned by an external actuating handle to retract the slidable element and permit the boot to be lifted in cross-country skiing.

3,753,573

VEHICLE BODY STRUCTURE

Taiji Ariga, Suginami-ku, Tokyo; Tatsumi Tsukikawa, Chiyoda-ku, Tokyo, and Hiroshi Ito, Ohta-ku, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed July 23, 1971, Ser. No. 165,047

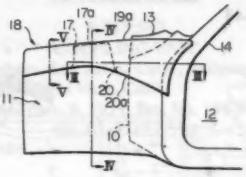
Claims priority, application Japan, Aug. 31, 1970, 45/76131; Aug. 31, 1970, 45/76132; Aug. 31, 1970, 45/86669

Int. Cl. B62g 11/00

U.S. Cl. 280—106.5 **18 Claims**

A vehicle body structure is disclosed which provides a strengthened support for a strut suspension and an increased

rigidity of a vehicle body. The strut suspension is supported by a member attached to a box-girder structure extending longitudinally of the vehicle body and rigidly secured to any structural member, such as a front pillar, of the vehicle body.



The box-girder structure may preferably be narrowed toward its foremost end so as to be collapsible when subjected to a forceful mechanical stress during collision of the motor vehicle. Arrangements may also be made so that the vehicle body structure can be assembled in a simplified manner.

3,753,574

TRAILER CONSTRUCTION

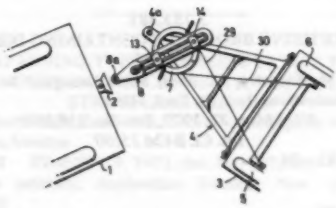
Arnold Werle, Attendornerstr. 9, Plettenberg-Oesterau, Germany

Filed June 8, 1971, Ser. No. 151,075

Claims priority, application Germany, June 8, 1970, P 20 28 080.2; May 21, 1971, P 21 25 236.8

Int. Cl. B62d 53/00

U.S. Cl. 280—478 A **11 Claims**



A trailer has a hitch connected to its front end, and to the free end portion of the hitch is mounted an elongated coupling member which can slide longitudinally of itself as well as turn about an upright axis with respect to the hitch. Arresting devices are provided which can prevent the coupling member from sliding and turning when it assumes a predetermined position with reference to the hitch, and on a terminal portion of the coupling member a coupling is provided by means of which the coupling member can be connected with a cooperating coupling on a traction vehicle.

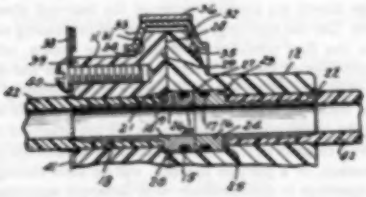
3,753,575

FLUID COUPLING ASSEMBLY

Gene Arthur Tracy, Hugo, Minn., assignor to The Cornelius Company, Anoka, Minn.

Filed Oct. 20, 1971, Ser. No. 190,931

U.S. Cl. 285—137 R **6 Claims**



A fluid-coupling assembly includes a pair of rigid housings clamped together including parallel bores therethrough into which flexible hoses project. A rigid barbed ferrule is disposed within the inner end of each of the hoses, and all of the ferrules have a fluid seal with one of the housings.

3,753,576

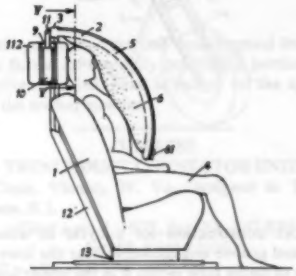
VEHICLE SAFETY DEVICE

John F. Gorman, Corner Cottage The Street, Effingham, Surrey, England

Filed Sept. 29, 1971, Ser. No. 184,834

Int. Cl. B60r 21/08

U.S. Cl. 280—150 AB **22 Claims**



A vehicle safety device comprising an expandible composite element provided with a mounting for location in a vehicle and which is expandible from an inoperative retracted position to an operative expanded position, and means for rapidly filling the element with a filler material to cause the expansion, the element including an outer shield which expands first and an inner shield which extends inwardly therefrom the expansion of which is commenced after expansion of the first shield has started.

3,753,577

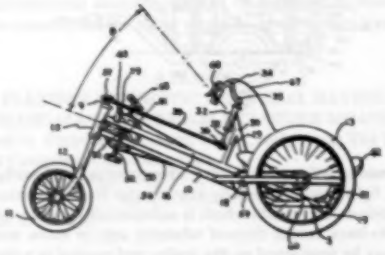
SPORTING VELOCIPEDE

Russell G. Robinson, 19301 McLaren Street, Huntington Beach, Calif.

Filed Mar. 2, 1971, Ser. No. 120,120

Int. Cl. B62k 5/06, 9/02

U.S. Cl. 280—261 **7 Claims**



A sport vehicle is described which comprises a three-wheeled velocipede having an arrangement of seat, pedal assembly and handle bars that achieves maximum maneuverability and speed. This arrangement comprises seat means positioned on the frame between the rear wheels, preferably below their axle height, pedal and crank assembly means positioned on the forward portion of the frame at an elevation that is preferably about the seat with interconnecting drive means to one or both rear wheels, and handle bar means between the seat and pedal assembly for steering the vehicle.

3,753,578

FRONT FORK CONSTRUCTION FOR A CYCLE

Herbert E. Rupp, II, Mansfield, Ohio, assignor to Rupp Industries, Inc., Mansfield, Ohio

Filed Feb. 25, 1972, Ser. No. 229,395
Int. Cl. B62k *21/02*
U.S. Cl. 280—276 **5 Claims**

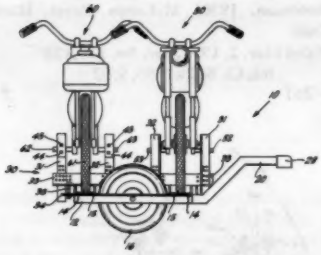
A front fork construction for a cycle in which circumferential rib and groove engagements near the lower end of an inner bearing or lining tube retain it in the upper load tube and retain a ferrule in fixed position on the upper tube and in sliding engagement with the lower tube for excluding dust from the sliding joint between the tube.

3,753,579

MOTORCYCLE-UTILITY TRAILER

Matthew Kurilich, Jr., 615 Reposado Dr., La Habra, Calif.

Filed Aug. 9, 1971, Ser. No. 170,047
Int. Cl. B60p *3/06*
U.S. Cl. 280—400 **15 Claims**



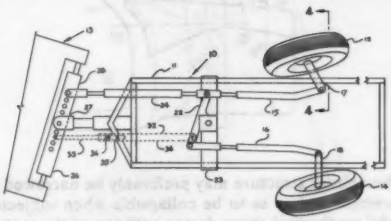
A motorcycle-utility trailer characterized primarily by a small, lightweight, generally rectangular frame member having a side-to-side width which is substantially greater than the front-to-back length thereof whereby one or more motorcycles may be positioned on the trailer and carried in a direction transverse to their lengths. The trailer has no suspension and the wheels thereof are rigidly connected to the frame member. A coupling extends from the front of the frame member for connection of the trailer to a trailer hitch. First and second pairs of spaced posts extend vertically upwardly from the front and back of the frame member, the spacing between the posts of each pair being approximately equal to the spacing between the centers of the pegs of a motorcycle. Finally, means are provided for connecting the pegs of a pair of motorcycles to such posts to prevent lateral or longitudinal movement of the motorcycles but permitting limited vertical movement thereof.

3,753,580

STEERING SYSTEM FOR TRAILERS

Henry Folkert, Rt. 1, Box 107, Granger, Wash.

Filed Jan. 3, 1972, Ser. No. 214,580
Int. Cl. B62d *53/00*
U.S. Cl. 280—443 **8 Claims**



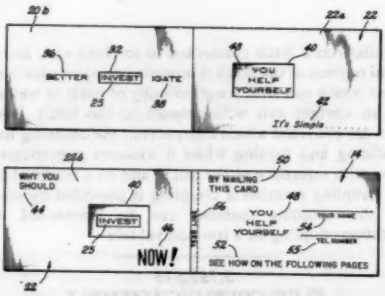
A steering system for trailers and other non-powered wheeled vehicles that are pulled or towed. A novel linkage arrangement is provided to turn the wheels of the trailer in response to a turning of the pulling vehicle whereby the wheels of the trailer will track in the same path as the wheels of the pulling vehicle. Further provision is made so that the wheels of the trailer can turn and still clear apparatus or structures on the tractor frame that fit closely between the upper portion of the wheels of the trailer when said wheels are in a straight position.

3,753,581

ADVERTISING BROCHURE CONTAINING DIE CUT SHEETS

Kenneth M. Kamstra, St. Paul, Minn., assignor to Kamstra Communications, Inc., St. Paul, Minn.

Filed Mar. 27, 1972, Ser. No. 238,193
Int. Cl. B42d *15/00*
U.S. Cl. 283—56 **13 Claims**



The sheets constituting the front and back covers of the brochure have a tear-out sheet therebetween. A first plurality of additional sheets are disposed intermediate the brochure's front cover and the tear-out sheet, and a second plurality of intermediate sheets are located between the tear-out sheet and back cover. Die cut openings or windows of increasing size are formed in the first plurality of intermediate sheets, whereas die cut openings of the same size are provided in the second plurality of intermediate sheets. Primary and secondary information or message areas are provided on the various sheets, including the cover sheets, and these areas are oriented or juxtaposed with respect to the various openings so that the primary information, or a portion thereof, will be seen through the window openings in combination with different secondary information which becomes visible as the pages are turned. The particular information area (or areas) visible at any one time depends on whether the tear sheet is still in the brochure or not.

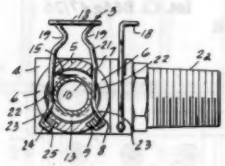
ERRATUM

For Class 285—137 see:
Patent No. 3,753,575

3,753,582
COUPLING UNIT

Charles H. Graham, Los Altos, Calif., assignor to Anarak Incorporated, Mountain View, Calif.

Filed Nov. 9, 1971, Ser. No. 196,975
Int. Cl. F16l *37/14*
U.S. Cl. 285—305 **4 Claims**

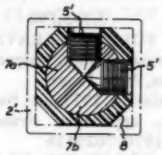


An easily operable quick-acting coupling unit including a pair of telescopic members, the female member carrying resilient locking means, and the male member being shaped for engagement by said locking means when inserted in the female member by a snap-in action; said locking means being movable to a release position to permit separation of said members.

3,753,583
EXPANDING-TYPE FASTENING DEVICE FOR DETACHABLE INTERCONNECTION OF HOLLOW STRUCTURAL DETAILS

Adrian Gottfried Offenbroich, Sodra Forstadsgaten 49, 211 43 Malmo, Sweden

Filed Nov. 9, 1971, Ser. No. 197,056
Claims priority, application Sweden, Nov. 10, 1970, 15146/70
Int. Cl. F16b *7/00*
U.S. Cl. 287—54 A **1 Claim**



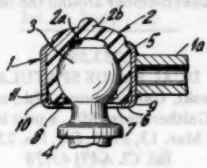
An expanding-type fastening device for detachable interconnection of hollow structural details comprises an expansible core made of rigid material, such as metal, and a coating of elastic material, such as plastic, fixedly arranged on the core.

3,753,584
UNIVERSAL JOINT CONSTRUCTION WITH RELEASABLE PARTS

Georg Kindel, Lemforde, Hann, and Jurgen Ulderup, Haldem, both of Germany, assignors to Lemforder Metallwaren AG, Lemforde/Hann, Germany

Filed Apr. 24, 1972, Ser. No. 246,811
Claims priority, application Germany, June 11, 1971, P 21 29 145.2
Int. Cl. F16c *11/06*
U.S. Cl. 287—85 A **6 Claims**

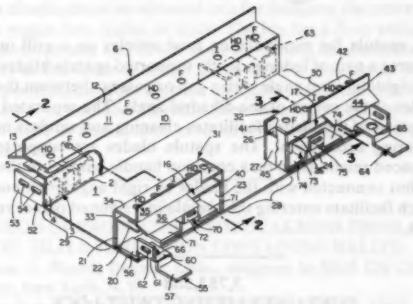
A releasable universal joint construction includes a tubular housing with a socket member of resilient material disposed in the housing in resilient engagement therewith. The socket member has at least one open end defining a joint pin insertion opening with an annular projecting collar extending into the opening. The socket wall is of a thickness in the vicinity of the collar to permit the collar and the wall to be displaced inwardly in said housing upon insertion of the ball head of a joint pin to permit passage of the ball head beyond the collar. The collar then forms an inwardly projecting portion below the ball head when the ball head is seated on the spherical seat defined by the socket member.



3,753,585
TRENCHDUCT CONNECTOR UNITS

John P. Casto, Vienna, W. Va., assignor to Textran Inc., Providence, R.I.

Filed Apr. 7, 1972, Ser. No. 242,070
Int. Cl. E04f *17/08*
U.S. Cl. 287—189.36 R **6 Claims**

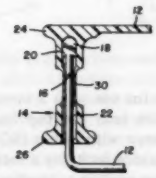


Units for connecting trenchduct runs arranged in T or X or L type patterns. A unit has specially configured sides providing side and end openings for alignment with the trench runs together with specially configured couplers compatible with the conventional coupling devices on the trench. The units may be constructed for either single or double adjust trench.

3,753,586
FLEXIBLE SYNTHETIC RESIN SEAL HAVING MANUALLY DEFORMABLE CLOSURE MEANS

Richard A. Patterson, St. Paul, Minn., assignor to The United Seal Company, Columbus, Ohio

Filed Apr. 24, 1972, Ser. No. 247,005
Int. Cl. B65d *55/06*
U.S. Cl. 292—322 **1 Claim**



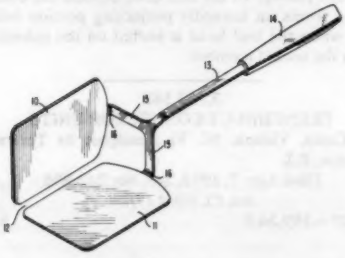
A closed-loop security seal for detecting unauthorized opening of a closure of a freight car, meter casing, or the like,

consisting of a one-piece body of molded synthetic resin composition which includes a flexible strap portion formed at one end with a barbed head and at its opposite end with a deformable socket member arranged to lockingly receive the head. The seal is locked against unauthorized opening by manually deforming the socket member around the barbed head.

3,753,587
DUAL BLADE SPATULA

Joseph F. Godlewski, Gaithersburg, Md., assignor to Vincent K. McMahon, Gaithersburg, Md., a part interest

Filed Mar. 13, 1972, Ser. No. 233,918
Int. Cl. A47j *43/28*
U.S. Cl. 294—7 7 Claims

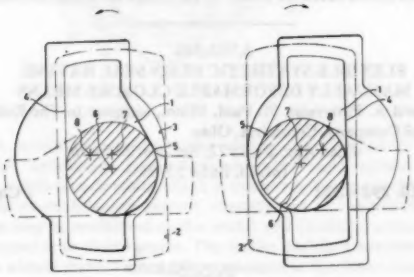


A spatula for manipulating food articles on a grill or pan features a pair of independently supported spatula blades held at a right dihedral angle with a gap or passage between the two blades at the vertex of the dihedral angle. The separated construction of the blades facilitates cleaning and renders manufacturing economical. The spatula blades are supported in balanced relationship on a common handle parallel to the vertex but connected with the blades by right angular extensions which facilitate entering the spatula in a rimmed pan or receptacle.

3,753,588
CONTAINER LIFTING TWIST-LOCK

Hans Ulrik Backteman, Bromma, Sweden, assignor to AB Backtemans Patenter, Bromma, Sweden

Filed June 11, 1971, Ser. No. 152,259
Claims priority, application Sweden, June 12, 1970, 8229/70
Int. Cl. B66c *1/66*
U.S. Cl. 294—82 R 4 Claims

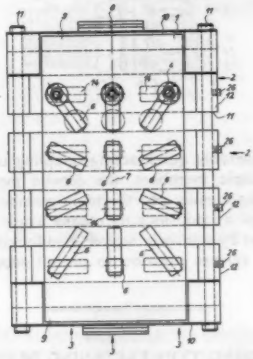


A locking device for use with a container lifting yoke and adapted for insertion into the top hole of containers constructed in accordance with either ISO or Sealand specification. The locking device includes a locking member having a cross sectional shape enabling insertion into the top holes of both ISO and Sealand containers, and a support shaft for the locking member to turn the latter 90° to lock the locking member below the hole in the container. The locking member is mounted eccentrically on the shaft and rotation of the shaft itself is effected about an axis which is eccentric to the vertical centers of the holes in the ISO and Sealand containers.

3,753,589
MULTIPLE BOTTLE GRIPPER

Winfried Hahn, Dortmund-Brackel, Germany, assignor to Holstein & Kappert Maschinenfabrick Phonix GmbH, Dortmund, Germany

Filed Feb. 28, 1972, Ser. No. 229,791
Claims priority, application Germany, Feb. 26, 1971, P 21 09 172.5
Int. Cl. B65g *47/26*
U.S. Cl. 294—87 R 22 Claims

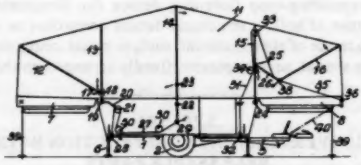


Multiple bottle gripper in which a plurality of gripper bells or lifting cups are supported on support means in a plurality of transverse rows and in each row spaced from each other so as to be also arranged in a plurality of longitudinal rows and in which adjusting means are provided for adjusting the position of the gripper bells relative to each other in the direction of the transverse rows and in a direction normal thereto.

3,753,590
FOLDING CARAVAN

Albert Coulx, Tournon, France, assignor to Societe Anonyme Trigano-Vacances, Paris, France

Filed May 10, 1971, Ser. No. 141,884
Claims priority, application France, May 25, 1970, 7018881; July 31, 1970, 7029126
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 R 16 Claims



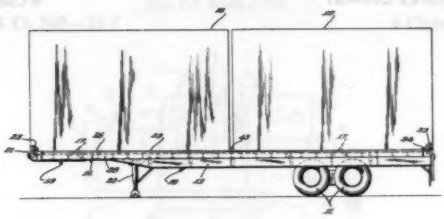
Folding caravan comprising a frame equipped with wheels and a harness, a body closed by two lids and containing the canvas for a tent which may be stretched over the said body when the two lids are opened, characterized in that the frame comprises five ribs of which three are articulated on the body whilst the other two are each articulated on one of the previously mentioned ribs in such a way as to obtain a middle rib articulated on the body, and on each side two ribs, one articulated on the body the other articulated or hinged on the preceeding rib, in such a way that the opening or closing of the lid automatically and instantaneously cause the folding or unfolding of the tent which is supported by the frame.

3,753,591

FLAT BED MATERIAL TRANSPORTING VEHICLE

Robert A. Pratt, Oak Brook, Ill., assignor to Portec, Inc., Oak Brook, Ill.

Continuation of Ser. No. 874,105, Nov. 5, 1969, abandoned.
This application Feb. 8, 1972, Ser. No. 224,428
Int. Cl. B60p *1/64*; B65j *1/22*
U.S. Cl. 296—35 A 11 Claims



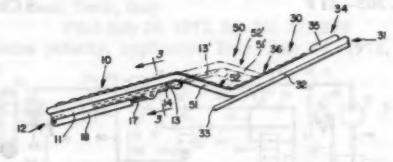
Flat bed transporting vehicle for containers, farm and road machinery and other vehicles and lading, having a series of anchor channels extending along the vehicle for the length of the vehicle and unitized with the frame structure of the vehicle to form a unitary part of the chassis frame supporting beams, in which couplers for containers or tie-downs for anchor chains or tie-downs winches may be locked in a selected position in the channels and stored in the channels when not in use. Where the vehicle is used for transporting containers, the couplers are positionable above the level of the channels and bed of the vehicle, to couple adjacent ends of containers to the bed of the vehicle, and are locked in extended positions by retaining sockets at the corners of the containers and are released to be retracted beneath the tops of the channels for storage or adjustment along the channels upon removal of the containers from the couplers.

3,753,592

LOUNGE

Carl Robert Jensen, 1555 14th St., Mitchell, Nebr.

Filed Feb. 11, 1971, Ser. No. 114,619
Int. Cl. A47c *3/00*, *7/02*
U.S. Cl. 297—284 12 Claims



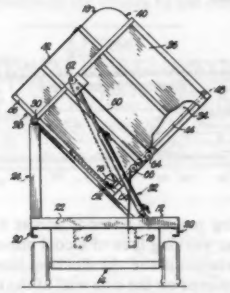
A lounge, or chair, especially a dental lounge, provided with a head supporting member and a seat portion. The seat portion is adjustable such that the head of a person reclining in the lounge is located at the head supporting member irrespective of his size. The seat portion comprises a flexible sling secured between an upwardly inclined leg support member and an upwardly inclined back support member, the back support member being offset downwardly from the leg support member. The seat portion is adjustable by moving a sling adjustment member, moveably mounted beneath the sling, in a direction generally longitudinally of the leg support member. The sling assumes a position between the leg support member and the back support member responsive to the position of the sling adjustment member thus setting the position of the seat portion at a desired position relative to the head support. The head of the person in the chair can thus be located at the head support irrespective of the person's size.

3,753,593

TILTABLE MATERIAL-RECEIVING BIN HAVING ACTUATED DUMPING FLOOR

Bernard L. Wells, and Hermann V. Stoessel, both of Wichita, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Apr. 21, 1971, Ser. No. 135,986
Int. Cl. B60p *1/16*
U.S. Cl. 298—10 14 Claims



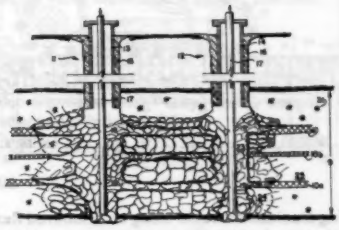
A bin for receiving forage or the like in the field during harvest is tiltable about an elevated axis for dumping the contents into a wagon box, trailer or truck. The bin has a floor swingable therein at one end of the floor for raising the contents in the bin as the latter is tilted. When the bin reaches its fully tilted position, the floor extends obliquely across the bin from one corner to another. Thus the floor assumes a position having an angle of repose such as to effect a full uniform flow of the material.

3,753,594

METHOD OF PRODUCING HYDROCARBONS FROM AN OIL SHALE FORMATION CONTAINING HALITE

Thomas N. Beard, Denver, Colo., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 770,964, Oct. 28, 1968, abandoned. This application Sept. 24, 1970, Ser. No. 75,037
Int. Cl. E21b *43/28*
U.S. Cl. 299—4 5 Claims

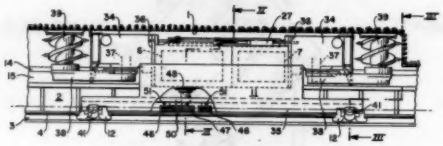


A method of producing hydrocarbons and optionally halite from a subterranean oil shale formation containing zone(s) of halite, by penetrating said formation with at least one borehole and leaching or dissolving the halite from the formation with a solvent fluid so as to form a cavern(s) and/or interconnected cavities, followed by fracturization and/or rubblization of the oil shale surrounding the caverns or cavities, and thereafter injecting into the fracturized and/or rubblized zones, a pyrolyzing fluid to effect insitu hydrocarbon recovery therefrom.

3,753,595
LONGWALL MINING MACHINE OVERHANGING FACE SIDE OF CONVEYOR

Willy Lanfermann, Bochum, Germany, assignor to Gebr. Eickhoff Maschinenfabrik Und Eisengiesserei m.b.H., Bochum, Germany

Filed Mar. 16, 1972, Ser. No. 235,155
Claims priority, application Germany, Mar. 19, 1971, P 21 13 399.3
Int. Cl. E21c *29/10*
U.S. Cl. 299—43 10 Claims

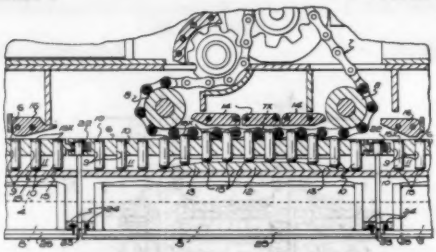


A coal cutting machine extends across a conveyor that is spaced from the working face of a coal mine, and across most of the space between it and the working face. One side of the machine is supported on the side wall of the conveyor along its gobbing side. The opposite side of the machine is supported by a skid on the foot wall of the mine. Between the conveyor and the working face the machine houses a winch and drive motor, and a cutter head housing is connected to an end of the machine body in the same area and contains a horizontal axle that projects from the conveyor side of the housing. Mounted on this axle is the inner end of an arm that extends lengthwise of the machine away from the cutter housing. The outer end of the arm carries a roll cutter that extends laterally from it across the housing.

3,753,596
MINING MACHINE WITH CHAIN DRIVEN PROPULSION

Gerald Richard Oldham Pentith, Yorkshire, England, assignor to Pitcraft Limited

Filed May 12, 1972, Ser. No. 252,591
Claims priority, application Great Britain, May 22, 1971, 16,532/71
Int. Cl. E21c *29/00*
U.S. Cl. 299—43 14 Claims

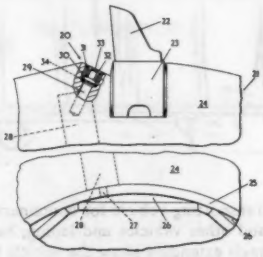


A mining machine movable along an armoured flexible conveyor each pan of which is provided with a rigid longitudinal guide rod for the machine, the machine having a winch-driven chain guided into a run alongside the guide rods, and each guide rod having a series of pockets housing pegs reciprocable towards and away from the run of the chain, each pocket being open to the chain and at the end remote from the chain open to a longitudinal slot along which a shoe carried by the machine is movable, and the shoe having tapering ends, so that as the shoe moves with the machine in either direction along the guide rods the pegs are urged to project from the pockets into engagement with the links of the chain in the run alongside the guide rods, to effect the driving of the machine along the conveyor.

3,753,597
ROTARY MINING HEAD WITH FLUID CONNECTOR MEANS FOR NOZZLE

Albert Graham French, Willington, England, assignor to Coal Industry (Patents) Limited, London SW1, England

Filed Dec. 3, 1971, Ser. No. 204,603
Claims priority, application Great Britain, Dec. 22, 1970, 60,772/70
Int. Cl. E21c *13/00*
U.S. Cl. 299—81 4 Claims

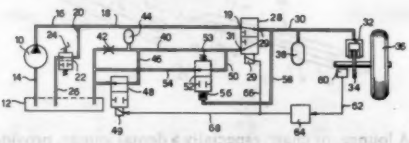


A cutter head for a mineral mining machine has connecting means for conveying dust suppression fluid to the cutting zone of the head. The connecting means comprises a tubular bush of synthetic plastics material which is inserted into a bore formed in the head. An apertured threaded member, conveniently a nozzle, is co-operable with the bush aperture such that when the mmember is screwed into the bush, the bush is expanded into the bore of the cutter head. In this way the member and the bush are releasably securable within the bore.

3,753,598
HYDRAULIC ANTISKID VEHICLE BRAKING SYSTEM, HAVING TWO MODES OF OPERATION

Giancarlo Michellone, Cambiano; Luigi Doano, Revigliasco d'Asti; Marco Peruglia, Turin, and Diamante De Ambri, Beinasco, all of Italy, assignors to FIAT Societa per Azioni, Turin, Italy

Filed July 27, 1971, Ser. No. 166,533
Claims priority, application Italy, Mar. 5, 1971, 67775 A/71; Apr. 6, 1971, 68143 A/71
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F 5 Claims



An hydraulic anti-skid braking system for vehicles, having two different modes of operation depending on the braking pressure required to cause the wheels to slip or for wheel locking to become imminent. If the surface is slippery the braking pressure required to cause sliding is not high and a rapid, substantially complete release of braking pressure takes place when the anti-skid device operates. If the surface has a good grip a high braking pressure is required to cause the wheels to slip and in this case a partial rapid release of pressure followed by a gradual release of pressure takes place when the antiskid device operates, to prevent excessive lurching during operation of the anti-skid device and to assist in a satisfactory anti-skid operation despite changing surface conditions.

3,753,599

PNEUMATIC ANTI-SKID VEHICLE BRAKING SYSTEM, HAVING TWO MODES OF OPERATION

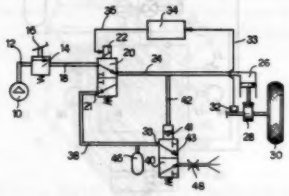
Giancarlo Michellone, Cambiano, Turin; Marco Peruglia, Turin, and Renzo Moretti, Cambiano, Turin, all of Italy, assignors to FIAT Societa per Azioni, Turin, Italy

Filed July 28, 1971, Ser. No. 166,846

Claims priority, application Italy, Dec. 30, 1970, 71335 A/70

Int. Cl. B60t 8/06

U.S. Cl. 303—21 F 6 Claims



An anti-skid braking system having two separate modes of operation depending on the road conditions is disclosed. In this system there is a device sensitive to the braking pressure which is required to cause the wheels to skid which operates to modify the operation of the device which releases the braking pressure so that if the braking pressure is below a certain threshold value (indicating that the surface is slippery) the braking pressure is released substantially instantaneously whereas if the braking pressure is above the threshold value (indicating that the road surface is dry and holding well) the braking pressure is initially only parially released rapidly, thereafter being released gradually until it has fallen below the threshold value whereupon it is again substantially instantaneously released down to atmospheric pressure, so that on dry surfaces the pressure is not completely released when skidding is imminent to avoid any jerkiness that would be deleterious to the road holding.

3,753,600

AUTOMATIC BRAKE PRESSURE CONTROL DEVICE FOR PNEUMATIC ANTI-SKID VEHICLE BRAKING SYSTEMS

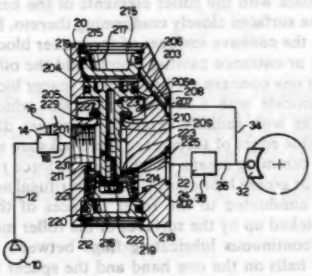
Carmelo Gemmellaro, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy

Filed July 20, 1972, Ser. No. 273,579

Claims priority, application Italy, July 24, 1971, 69488 A/71

Int. Cl. B60t 8/06

U.S. Cl. 303—21 F 5 Claims



This invention provides a brake pressure control device for connection in series with the control valve of an anti-skid pneumatic braking system having an axially movable piston the position of which is determined by the difference between the pressure in a chamber communicating with the brake actuator itself and a chamber communicating with the brake pressure supply through a first floor restricting passage. The piston is normally in a closed position, but when the pressure at the brake actuator is released by the action of the anti-skid control valve upon detection of imminent wheel locking the piston moves into an operative position in which it places the said chamber in direct communication with the brake pressure supply while at the same time limiting the pressure supply to the brake control valve to a second restricted passage preventing sharp re-application of the brakes by the control valve.

3,753,601

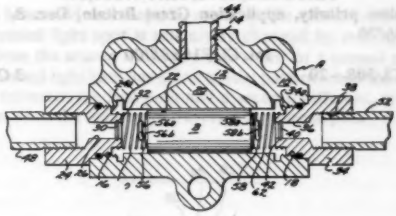
FLUID ACTUATED BRAKE SAFETY DEVICE

James R. Hensley, 1325 Nutmeg, Escondido, Calif.

Filed Aug. 9, 1971, Ser. No. 170,122

Int. Cl. B60t 17/22

U.S. Cl. 303—84 A 7 Claims



A safety device for use with two concurrently operable fluid actuated brake assemblies. The device is intermediately positioned between a master cylinder and the two brake assemblies. Upon a leak developing in one of the brake assemblies a valve member that forms a part of the safety device moves from a first to a second position to prevent further discharge of fluid to the defective brake assembly. The safety device allows the non-defective brake assembly to continue to operate in a normal manner.

Upon the valve member moving to a second position, an electrically operated warning light is illuminated to warn the driver of the vehicle on which the safety device is installed that one set of brake assemblies is inoperative. The safety device has two longitudinally spaced resilient O-rings associated with the valve member, with each O-ring serving both to effect a seal when the valve member moves to a second position, as well as to lock the valve member in this second position. A second form of the safety device utilizes a spring-loaded detent to hold the valve member in a second position.

3,753,602

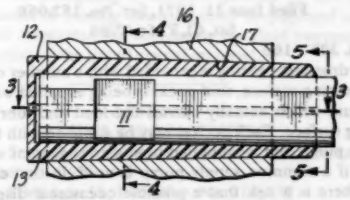
ADAPTER FOR FIBERGLASS TOOL HANDLES AND OTHER FIBERGLASS CONNECTIONS

Joseph Allen Carmien, Sun Valley, Calif., assignor to Nupla Corporation, Sun Valley, Calif.

Filed Jan. 28, 1972, Ser. No. 221,615

Int. Cl. B25g 3/28

U.S. Cl. 306—33 1 Claim



An adapter for connecting tool heads to fiberglass tool handles and for making other fiberglass attachments. An adapter

which is preferably formed in two sections is mounted around and over the end of the tool handle. Interlocking means or frictional engagement are provided to hold the adapter in place. The tool head is provided with an interior opening which is formed complementarily to the tapered exterior of the adapter. The head is driven into place around the adapter by striking the end of the handle on the ground. The adapter is capable of cold flow to fill in a substantially perfect manner the area between the tool handle and head.

3,753,603

BEARING ASSEMBLIES FOR THE ROLLERS OF A ROLLER CONVEYOR

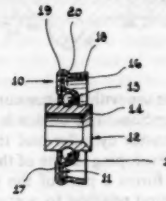
Bernard Pinner, Wednesbury, and Edmund Charles King, Sedley, Dudley, both of England, assignors to Brockhouse Conveyor Bearings Limited, Tipton, Stafford, England

Filed Dec. 2, 1971, Ser. No. 204,099

Claims priority, application Great Britain, Dec. 8, 1970, 58,146/70

Int. Cl. F16c *35/00*

U.S. Cl. 308—20 **3 Claims**



A bearing assembly for fitting in the ends of a tube which forms a roller of a roller conveyor, such bearing assembly comprising an outer pressing which has a skirt and an annular plate, an inner pressing forming an outer part of a ball race and a centre roller forming an inner part of a ball race, and having a central bore for fitting on a spindle. The skirt is frusto-conical and extends from a rolled-over flange at the periphery of the outer pressing, such flange also engaging over the periphery of the inner pressing, and the end of the roller tube being peened over into engagement with the skirt when the bearing assembly is fitted into the end of the tube.

3,753,604

PRESSURE FLUID DISTRIBUTOR AT AN HYDROSTATIC BEARING

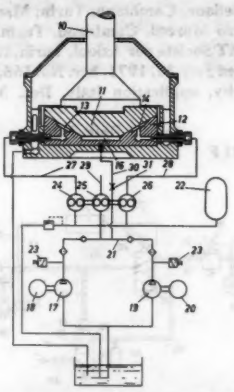
Torsten Henry Arsenius, Goteborg, Sweden, assignor to SKF Industrial Trading and Development Company, N.V., Amsterdam, Netherlands

Filed June 11, 1971, Ser. No. 152,068

Int. Cl. F16c *17/06*

U.S. Cl. 308—160 **5 Claims**

A hydrostatic bearing is provided with a number of pockets in its bearing surface, said pockets being supplied with a pressure fluid which actually carries the load and lubricates the bearing surface. Each pocket may be supplied with fluid from its own pump, but a simplified piping arrangement will be obtained if a common supply pump is used. In that case, however, there is a risk that a possible occasional displacement between the bearing parts will bring about an unexpectedly large outflow at one or some of the pockets, which will endanger the function of the bearing. The invention proposes the use of a distributor acting as a metering unit and consisting of a number of interconnected displacement pumps driven by the fluid. A tendency to increased leakage at one pocket, thus,



will not mean a correspondingly increased flow through the distributor at the pertaining metering unit as the other units will brake the units tending to run more freely.

3,753,605

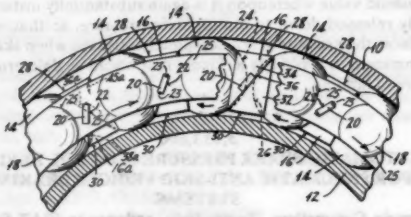
ANTI-FRICTION BEARING ASSEMBLAGE WITH CENTRIFUGAL FILM LUBRICATION ON CAGE SURFACES

Kenneth G. Lehmann, 5 Kent Rd., Easton, Conn.

Filed July 6, 1971, Ser. No. 159,707

Int. Cl. F16c *33/30*

U.S. Cl. 308—187 **5 Claims**



An anti-friction bearing assemblage comprising two race members with rolling bearing elements held captive between the members. The illustrated embodiment shows ball bearings; however, roller bearings may be utilized as well. Uniform spacing is maintained between the roller elements by a multi-part cage comprising a pair of circular flat side rings between which hollow-surfaced spacer blocks are secured. The spacer blocks alternate with the roller elements of the bearing, and have concave surfaces closely conforming thereto. Reliefs are provided on the concave surfaces of the spacer blocks to provide leading or entrance cavities which hold the oil or grease lubricant. At one concave surface of each spacer block the reliefs communicate with a lubricant feed slot which in turn communicates with radially extending passages disposed in the blocks. Side edges or surfaces of the blocks are sloped and constitute a camming means which tends to force radially inward the oil or grease lubricant. Under centrifugal action such lubricant is conducted to the relief surfaces of the blocks, where it is picked up by the surfaces of the roller members so as to form continuous lubricating films between the roller members or balls on the one hand and the spacer blocks on the other hand. Maximum lubrication and minimum friction between the rolling elements and the blocks constituting the cage are therefore attained, being aided by centrifugal force as the turnable portions of the bearing rotate, this being in addition to the cohesion of lubricant on the surfaces of the elements.

3,753,606

FILM STORING CABINET

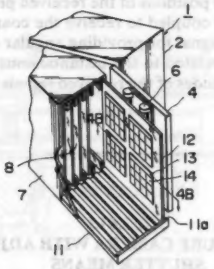
Jiro Ozeki, No. 15, 2-chome, Senkawa-cho, Tokyo, Japan

Filed Feb. 29, 1972, Ser. No. 230,439

Claims priority, application Japan, Aug. 28, 1971, 46/77156; Feb. 10, 1972, 47/16899

Int. Cl. A47p *63/00*

U.S. Cl. 312—223 4 Claims



A film storing cabinet, comprising an outer casing with a door means and a film box swingably secured to the inside of the casing through a shaft means. The film box is selectively enclosed by the casing by closing the door means. Upon opening the door, the film box may swing about the shaft means so as to move its open end to the outside of the casing, and films or film-holding sheets slidably stored in the film box can selectively be brought out for inspection of films carried by the film-holding sheets.

3,753,607

OPTICAL IMAGE TRANSMITTING STRUCTURE

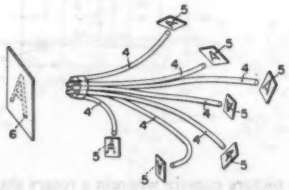
Ichiro Kitano, Higashinada-ku, Kobe-shi, Hyogo-ken; Ken Koizumi, Itami-shi, Hyogo-ken, and Hiroyshi Matsumura, Higashi-ku, Osaka-shi, Osaka-fu, all of Japan, assignors to Nippon Selfoc Kabushiki Kaisha (a.k.a. Nippon Selfoc Co., Ltd.), Tokyo-to, Japan

Continuation of Ser. No. 852,333, Aug. 22, 1969, abandoned. This application Jan. 17, 1972, Ser. No. 218,492

Claims priority, application Japan, Aug. 27, 1968, 43/61371

Int. Cl. G02b *5/16*

U.S. Cl. 350—96 B 6 Claims



An optical image transmitting device capable of transmitting an image of an object to a plurality of locations comprises a plurality of optical fibers which are bundled together at their one ends and are separated from each other at their other ends, each of the optical fibers having a refractive index distribution represented substantially by the following equation

$$n = N(1 - ar^2),$$

where N represents the refractive index the center point thereof in a cross section of the fiber, n represents the refractive index at a radial distance *r* from the center point, and *a* is a positive constant, whereby plural images of one object field can be respectively produced at the separated end faces of the optical fibers.

3,753,608

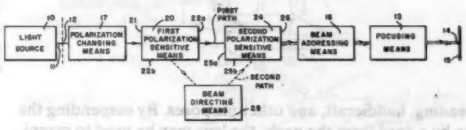
OPTICAL POLARIZATION SPOT SIZE CHANGING DEVICES

Enrique Bernal G., Minnetonka, Mich., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 15, 1971, Ser. No. 134,246

Int. Cl. G02f *1/26*

U.S. Cl. 350—150 27 Claims



In a beam-addressed optical memory, the spatial pattern of the focused light spot is selectively changed by making the light from the source traverse either a first or a second path. The focused light spot has a first spatial pattern when the light beam traverses the first path and a second, different, spatial pattern when the light beam traverses the second path.

3,753,609

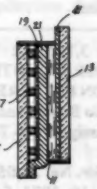
LIQUID CRYSTAL DISPLAY

Marshall Leibowitz, Englewood, N.J., assignor to Ing. C. Olivetti and Co., S.p.A., Ivnea, Italy

Filed Dec. 8, 1971, Ser. No. 205,864

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC 4 Claims



A liquid crystal display in which a layer of liquid crystal material is confined between a pair of substrates in which two sets of parallelly disposed electrodes are disposed on one of the substrates at an angle with one another with a layer of dielectric material between the sets. Excitation voltage is applied between selected adjacent pairs of electrodes from each of the sets for energizing a selected portion of the liquid crystal material. A biasing electrode may be disposed on the other of said substrates for decreasing the field necessary to cause excitation of the liquid crystal material.

3,753,610

FRESNEL LENS MOUNTING

Bernard U. Samuel, c/o Bernard Associates, Inc., P. O. Box 2737, Atherton, Calif.

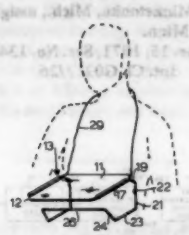
Filed Jan. 11, 1972, Ser. No. 216,439

Int. Cl. G02b *7/02*

U.S. Cl. 350—248 7 Claims

A wire frame supports a plastic fresnel lens mounted thereon. The frame is bent in a plurality of stretches, enabling

the lens to be supported on a table or other surface in different positions so that the work may be viewed from various angles



for reading, handicraft, and other purposes. By suspending the frame by a cord from the neck, the lens may be used to magnify work held in the lap, etc.

3,753,611

BIFOCAL MAGNIFYING GLASS TO BE HELD IN FRONT OF ONE EYE

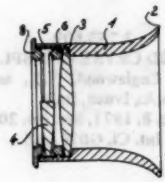
Ejvind Ebbesen, Torvegade 56, Copenhagen, Denmark

Filed Sept. 9, 1971, Ser. No. 178,887

Claims priority, application Denmark, Sept. 16, 1970, 4749

Int. Cl. G02b 7/02

U.S. Cl. 350—249 **7 Claims**



The invention relates to a magnifying glass to be held in front of one eye and having one or more turnable lens systems with different fields of vision.

3,753,612

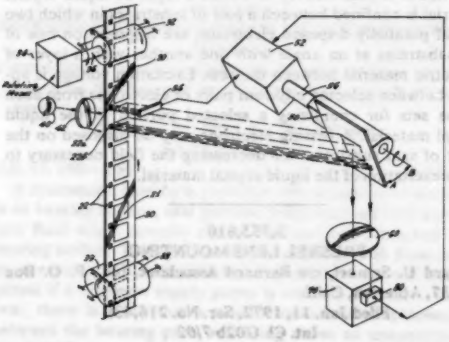
FRAMING DEVICE FOR A CONTINUOUSLY MOVING MOTION PICTURE FILM

Bernard J. Okey, Redondo Beach, and Daniel J. Marshall, San Pedro, both of Calif., assignors to The Magnavox Company, Torrance, Calif.

Continuation-in-part of Ser. No. 24,054, March 26, 1970. This application Nov. 10, 1971, Ser. No. 197,335

Int. Cl. G03b 41/10

U.S. Cl. 352—109 **30 Claims**



A device for framing a continuously moving motion picture film having a plurality of index marks, including a means for providing a beam of light for projecting images of index marks on the film or index marks directly related to the index marks on the film. A feed means continuously moves the film past the beam of light. A first detector is in alignment with the beam of light for receiving the projected images of the marks in alignment therewith for providing a coarse drive signal having an amplitude related to the position of the reflected image. A reflector is positioned to reflect the images of the marks in alignment therewith. A second detector is positioned to detect images reflected by the detector for providing a fine drive signal related to the positions of the received projected image. A drive assembly is coupled to receive the coarse drive signal and the fine drive signal for providing angular rotation to the reflector at a rate related to the instantaneous summation of the electrical amplitudes of the received signals.

3,753,613

MOTION PICTURE CAMERA WITH ADJUSTABLE SHUTTER MEANS

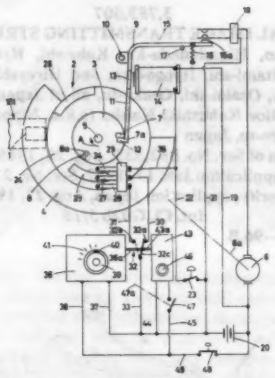
Herbert Reinsch, Kongen; Gottfried Kuhne, Birkmannsweiler, and Wolf Schirmer, Stuttgart, all of Germany, assignors to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Feb. 24, 1972, Ser. No. 228,872

Claims priority, application Germany, Mar. 8, 1971, P 21 10 923.9

Int. Cl. G03b 17/46

U.S. Cl. 352—121 **12 Claims**



A motion picture camera wherein a rotary shutter is movable between first and second angular positions in which its blade respectively overlies and is out of register with the light-admitting aperture. An adjustable first pulse generator is provided to effect movements of the shutter from the first to the second position at preselected intervals to thereby start exposure with long exposure times. A second pulse generator is activated when the shutter assumes its second position and effects a movement of the shutter back to the first position with a delay which is a function of scene brightness but is invariably shorter than a preselected interval. The two pulse generators control a two-way switch which can cause an electromagnet to disengage an intercepting lever from the shutter whereby the lever starts the motor which rotates the shutter from the first to the second position when the switch is actuated by the first pulse generator and from the second to the first position when the switch is actuated by the second pulse generator.

3,753,614

CINEMATOGRAPHIC PROJECTOR

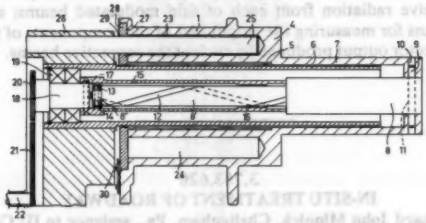
Bernardus Johannes Kuppens, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 247,157

Claims priority, application Netherlands, May 4, 1971, 7106038

Int. Cl. G03b 3/00

U.S. Cl. 352—142 6 Claims



Cinematographic projector including a translatable and rotatable objective turret which is secured to a spindle in which a helical groove has been formed. The spindle is surrounded by a rotatably supported and axially immovable sleeve which internally is provided with a projection engaging in the groove in the spindle and is rotatable by a drive motor. When the motor is started the turret is initially moved in a straight line to an extended position until a stop provided on the spindle abuts against the projection of the sleeve, whereupon the spindle and the turret aré rotated as an integral unit together with the sleeve. By reversing the direction of rotation of the motor the turret is returned in a straight line.

3,753,615

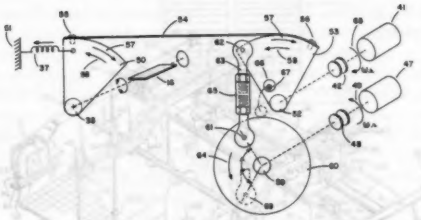
SCANNING APPARATUS

Daniel Richard Erny, Boonton, and Merrill Brandle, Wanaque, both of N.J., assignors to Van Dyk Research Corporation, Whippany, N.J.

Filed Apr. 26, 1972, Ser. No. 247,872

Int. Cl. G03g 15/04

U.S. Cl. 355—8 11 Claims



An optical scanning arrangement for use in a xerographic copier, in which a mirror is rotated through a predetermined angle to scan the document to be copied. The angle through which the mirror is rotated varies according to the length of the document. A spring returns the mirror to its initial rest position. A shaft rotating at a fixed angular velocity is coupled to the mirror through an overrunning clutch, so as to limit the speed at which the mirror returns to its rest position to a velocity corresponding to that of the shaft. A linkage is provided to reduce the angular velocity of the mirror as the rest position of the mirror is approached, thus minimizing shock to the scanning mechanism.

3,753,616

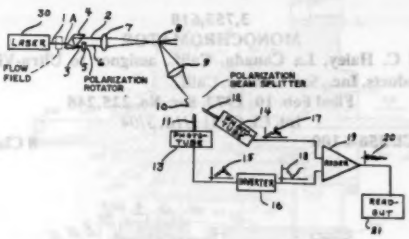
LASER DOPPLER VELOCIMETER DETECTOR

Winfried H. Goethert, Tullahoma, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 22, 1971, Ser. No. 200,718

Int. Cl. G01p 3/36

U.S. Cl. 356—28 2 Claims



A laser doppler velocimeter detector for determining velocity information in flow fields in which a laser beam utilized in the flow field is split into a pair of beams, one of which has its plane of polarization rotated 90°. A portion from each of the oppositely polarized beams is mixed to produce the desired doppler information. Polarization beam splitting is provided producing two beams, each containing doppler shifted information. Each of the beams is detected to provide a pair of representative electrical signals, one of which is subsequently inverted and added to the uninverted to result in a signal having only the frequency content of the original doppler information.

3,753,617

METHOD OF AND APPARATUS FOR COMPARING ONE ARTICLE WITH ANOTHER SIMILAR ARTICLE

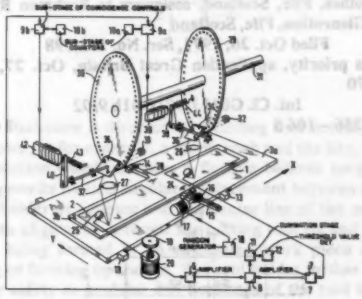
Kurt Ehrat, Zurich, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdonf, Switzerland

Filed Feb. 18, 1972, Ser. No. 227,387

Claims priority, application Switzerland, Feb. 26, 1971, 2904/71

Int. Cl. G01k 9/08; G01b 11/24

U.S. Cl. 356—71 24 Claims



A method and apparatus for comparing one article with another similar article, the article being for example documents or bank notes to detect forgeries or discrepencies. The method comprises scanning with a beam of light a randomly selected discrete area of a document under examination, a corresponding discrete area of a standard document and correlating the values obtained from light reflected from the scanned areas to obtain a value indicating substantial identity of the areas. Preferably more than one area is scanned and the position of each area to be scanned is selected in a random fashion and the correlation values obtained for each of the

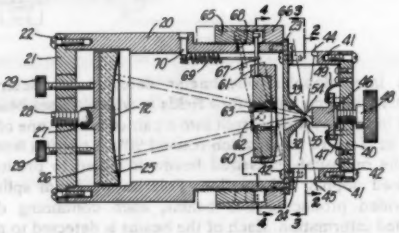
corresponding areas scanned indicating whether or not the document under examination is genuine. Apparatus is also provided for carrying out the above method and comprises in one form a support for the document under examination and the standard document which is moved continuously in one direction and randomly in another direction orthogonal to the one direction, a scanner being provided over each document to scan the aforementioned corresponding discrete areas.

3,753,618

MONOCHROMATOR

Floyd C. Haley, La Canada, Calif., assignor to Ultra-Violet Products, Inc., San Gabriel, Calif.

Filed Feb. 10, 1972, Ser. No. 225,248
Int. Cl. G01j *3/18, 3/04*
U.S. Cl. 356—100 **8 Claims**



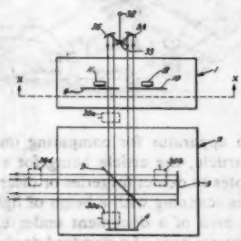
A compact monochromator with entrance and exit slits nearly incident permitting insertion and removal of the monochromator at a focal point without requiring change in the system. A monochromator with entrance and exit slits each formed by an edge and a mirror. A monochromator with entrance slit and mirror directing the beam through an aperture in a grating to a collimating mirror, defining a light path from the entrance slit and mirror to the collimating mirror to the grating and back to the collimating mirror to the exit mirror and slit.

3,753,619

INTERFERENCE SPECTROSCOPY

Leslie William Thorpe, Beckenham, Kent, England; Geoffrey Charles Hayward, and James Leslie Charles Waters, both of Glenrothes, Fife, Scotland, assignors to Beckman R.I.I.C., Ltd., Glenrothes, Fife, Scotland

Filed Oct. 26, 1971, Ser. No. 192,598
Claims priority, application Great Britain, Oct. 27, 1970, 50,975/70
Int. Cl. G01j *3/42*; G01b *9/02*
U.S. Cl. 356—106 S **7 Claims**



Spectroscopic apparatus for obtaining spectral information about a sample including means for producing two parallel beams of radiation adapted to selectively pass through the sample.

Spectroscopic apparatus comprising means for producing two parallel beams of radiation adapted to selectively pass through a sample; means upon which each of the beams is incident for dividing said beams into partially reflected and partially transmitted components; means for superimposing the reflected and transmitted components of each beam upon each other to recombine the respective beams, said superimposing means including at least one reflecting means for reflecting one of the components of each beam which is movable in a direction parallel to the direction of incidence of the beam components; means for modulating the intensity of each beam at a different frequency; detector means adapted to receive radiation from each of said modulated beams; and means for measuring the amplitudes of the components of the detector output produced by each of the respective beams.

3,753,620

IN-SITU TREATMENT OF ROADWAY

Leonard John Minnick, Cheltenham, Pa., assignor to IU Conversion Systems, Inc., Philadelphia, Pa.

Division of Ser. No. 780,902, Dec. 3, 1968, Pat. No. 3,634,115.
Filed June 7, 1971, Ser. No. 150,777
Int. Cl. E01c *7/36*
U.S. Cl. 404—76 **2 Claims**

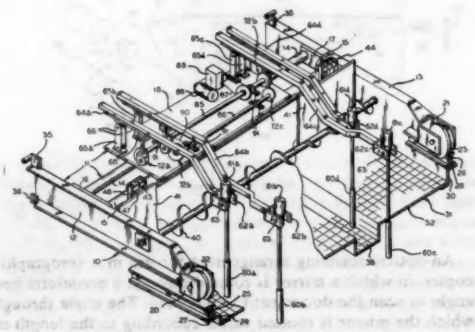
A new bituminous coal fly ash is sulfopozzolanically reactive and contains combined sulfate in stated proportions relative to alkaline earth metal oxide content. Load-supporting compositions of this fly ash combined with aggregate, and a method of applying the new fly ash to an existing surface.

3,753,621

CONCRETE-WORKING MACHINE WITH WALKING VIBRATORS

Charles Harry Dale, Rock Island, Ill., assignor to East Moline Metal Products Company, East Moline, Ill.

Filed Apr. 16, 1971, Ser. No. 134,694
Int. Cl. E01c *19/38*
U.S. Cl. 404—116 **14 Claims**



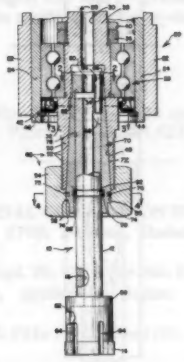
Concrete-working machine component with concrete-spreading auger, vertically adjustable strike-off plate, forwardly projecting, vertically oscillatable arms bearing depending vibrators which reciprocate into and out of the concrete, and crank or cam drives for said arms.

3,753,622

DRILL SHANK AND CHUCK ASSEMBLY FOR A DRILL PRESS

Harold C. Miller, Chicago, Ill., assignor to Super-Cut, Inc., Chicago, Ill.

Filed Sept. 3, 1971, Ser. No. 177,774
Int. Cl. B23b *31/08, 51/06*
U.S. Cl. 408—59 1 Claim



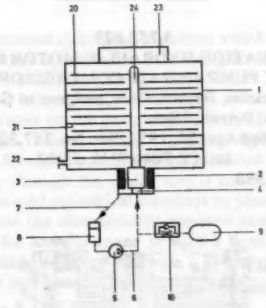
A drill shank and chuck assembly adapted for use in a drill press or the like and embodying an adapter collet which, by a detent action, enables drill substitution to be effected without drill press adjustment.

3,753,623

TURBO MOLECULAR VACUUM PUMP

Max Wutz, Hanau, Germany, assignor to W. C. Heraeus GmbH, Hanau, Germany

Filed July 27, 1972, Ser. No. 275,750
Claims priority, application Germany, July 30, 1971, P 21 38 152.2
Int. Cl. F04b *17/00*
U.S. Cl. 417—424 16 Claims



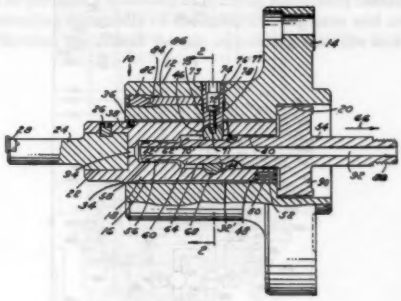
A housing retains stationary turbine blade rings, extending radially inwardly therefrom; interleaved between the stationary blade rings are rotatable blades, secured to a shaft; the shaft has a lower hollow portion surrounding an upright bolt, extending from the housing. Lubricant under pressure is introduced through a duct centrally of the bolt between the top surface of the bolt and the bottom surface of the lower portion of the shaft, which forms a hollow surrounding the bolt, to journal the bolt, in a hydrodynamic or hydrostatic bearing, and prevent splatter of lubricating oil into the high vacuum region above the lower end of the shaft, and where the turbine blade rings are located.

3,753,624

BORING TOOL FOR SMALL DIAMETERS

Robert W. Walker, Detroit, and Victor Milewski, Troy, both of Mich., assignors to The Valeron Corporation, Detroit, Mich.

Filed Aug. 20, 1971, Ser. No. 165,818
Int. Cl. B23b *29/034*
U.S. Cl. 408—159 16 Claims



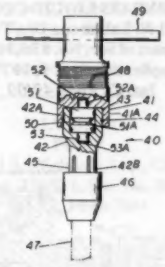
A boring tool having internal means for adjusting the cutting diameter comprising a housing pivotally supporting a tool shank therewithin and wedge means positioned within the shank to provide radial adjustment of the cutting point upon axial linear actuation of the wedge means.

3,753,625

CUTTING TOOL HOLDER OR ADAPTOR

Ralph S. Fabrizio, 108 Kenwood Ave., and Nicholas J. Georgette, 192 Winfield Dr., both of Stratford, Conn.

Filed July 28, 1971, Ser. No. 166,749
Int. Cl. B25b *13/00*
U.S. Cl. 408—239 17 Claims



This disclosure is directed to a cutting tool holder, wrench or adaptor, as for example, a tap wrench and the like, having a body portion which includes a flexible bellows torque drive which permits limited angular displacement between the body of the holder or adaptor and the center line of the tool bit to maintain alignment between the cutting tool bit and the hole or tap being formed in an associated work piece during a cutting or forming operation. The tool holder further includes a shear safety to prohibit any breakage of the tool bit in the event the applied torque moment exceeds those forces which would otherwise break the tool bit.

3,753,626

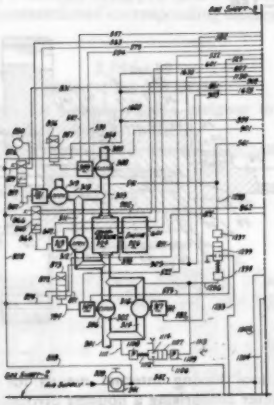
AUTOMATIC CONTROL SYSTEM

Ray M. Bacchi, Oakland, Calif., assignor to De Laval Turbine Inc., Oakland, Calif.

Filed Aug. 27, 1970, Ser. No. 67,540
Int. Cl. F04b *49/02*
U.S. Cl. 417—1 4 Claims

An internal combustion engine drives a reciprocating compressor installed with various flow control valves in a gas

pipeline. A pneumatic system using logic elements and control boards controls the starting, running and stopping of the engine and compressor and the working of the valves either from a point at the site or from a remote point. There are several



choices of the relative amount of control by an attendant or automatically and including automatic imposition of load and response to variations in load and also automatic response to anomalous or dangerous conditions.

3,753,627

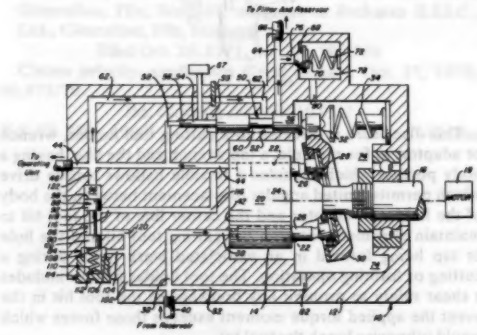
PUMP BYPASS LIQUID CONTROL

Elmer F. Ward, 1041 N. LaLimona Dr., Tustin, Calif.

Continuation-in-part of Ser. No. 836,312, June 25, 1969, abandoned. This application Apr. 9, 1971, Ser. No. 132,749

Int. Cl. F04b *49/00*

U.S. Cl. 417—213 **6 Claims**



A fluid circulation system having a primary flow circuit for supplying fluid under pressure to an operating unit for performing a desired control function and a secondary flow circuit operative under regulated pressure conditions of said primary flow circuit for effecting a regulated control of the fluid being circulated in said secondary flow circuit. The pressure and rate of flow of fluid in the secondary flow circuit is a function of the pressure and rate of flow of fluid in the primary circuit.

3,753,628

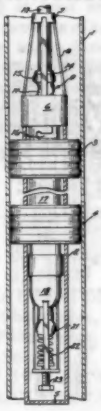
ROTARY TYPE OIL OR WATER PUMP

John G. Becker, 260 Euclid Ave., Long Beach, Calif.

Filed May 15, 1972, Ser. No. 253,165

Int. Cl. F04b *49/00, 47/02*

U.S. Cl. 417—310 **6 Claims**



This invention relates to a rotary type oil or water pump in which a convoluted stator is provided in which a helical screw rotor operates to force liquid to the surface. I provide a pump in which pump failures are reduced due to preventing the accumulation of fine sand or silt in the pump by providing a spring-pressed check valve which automatically opens to eject sand or silt when excessive weight of this accumulation bears against a check valve. I also provide a means of raising or lowering the pump and the operating parts thereof by a single run of the pump either into or out of the well.

ERRATUM

For Class 417—520 see:
Patent No. 3,753,632

3,753,629

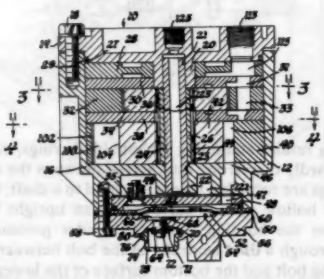
COMBINATION HYDRAULIC MOTOR DRIVEN HYDRAULIC PUMP AND AIR COMPRESSOR ASSEMBLY

George W. Jackson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 28, 1972, Ser. No. 247,325

Int. Cl. F04b *9/10, 35/02*

U.S. Cl. 417—388 **3 Claims**



A hydraulic pump driven by a reaction motor energized by pressurized fluid, in one application, from a vehicle power steering system. The hydraulic motor includes a reaction rotor

driving a pump rotor. Hydraulic fluid is pressurized by the pump and applied against one side of a diaphragm air compressor. The diaphragm responds to inlet and discharge pulses in the hydraulic pump pressurizing air in a chamber on the other side of the diaphragm. Inlet and exhaust valves are associated with the air pressurizing chamber regulating flow of inlet air into and discharge of pressurized air out of the chamber during cyclic operation of the pump. In preferred form; the motor, pump and diaphragm compressor are incorporated into an integral unit and air pressurized by the compressor is supplied to a vehicle leveling system.

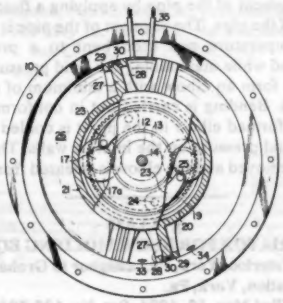
ERRATUM

For Class 417—424 see:
Patent No. 3,753,623

3,753,630
INTERNAL COMBUSTION ENGINE

Susumu Sadahiro, 1700, 2-chome, Ikebukuro, Toshima-ku, Tokyo, Japan

Filed Sept. 20, 1971, Ser. No. 182,080
Claims priority, application Japan, Sept. 25, 1970, 45/84237
Int. Cl. F01c *1/00*; F04c *1/00, 17/00*
U.S. Cl. 418—36 **3 Claims**



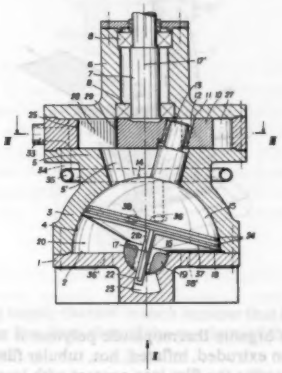
A pair of bottomed cylindrical members which are rotatable relative each other are installed in a casing so as to pressure-tightly define an annular space therewithin. This annular space is divided into several chambers by a diametrically opposed pair of vanes on the periphery of each of the aforesaid members, the vanes being pressure-tightly slidable therethrough. A rotatable disk is firmly mounted on a shaft extending axially through the casing and is connected with the respective bottomed cylindrical members by planetary gearing thereby to cause the diametrically opposed pairs of vanes to turn through the annular space in such a manner that each pair is alternately revolved through a predetermined angle while the other pair remains substantially unactuated.

3,753,631
PISTON MACHINE

Adolf Stelzer, 176-4, Daiba, A-8605 Kaptenberg, Austria

Filed Oct. 12, 1971, Ser. No. 188,255
Claims priority, application Austria, Oct. 12, 1970, 29132
Int. Cl. F01c *1/02, 11/00*; F04c *23/00*
U.S. Cl. 418—3 **2 Claims**

A piston machine comprising a casing having a hemispherical internal surface and a substantially plane internal surface, a piston body mounted in said casing and comprising a spherical segment and a conical member, having an obtuse apex angle, mounted on the piston body, the centre of the spherical segment coinciding with the theoretical apex of the conical member, the spherical segment bearing against the hemispherical internal surface, the said substantially plane internal surface passing through the centre of the conical member, at least one plate projecting radially from the piston body and lying sealingly against the casing, said at least one plate subdividing the said substantially plane internal surface, the conical member having a generatrix disposed at least closely adjacent to the substantially plane internal surface of the casing and adapted to perform a wobbling or gyrating movement thereon, a pin extending outwardly of the spherical segment and connected thereto, the axis of the pin coinciding with the axis of

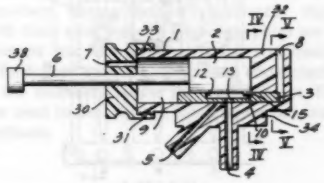


the conical member, a shaft mounted in the casing, the shaft being perpendicular to the substantially plane internal surface, the shaft being disposed at an acute angle to the axis of the pin, the sum of the said acute angle together with the obtuse apex angle of the conical member amounting to 180°, and a crank disc on the shaft, the crank disc having, on one side of the centre thereof, a bore in which the piston body pin is rotatably mounted, whereby, when the piston body performs a rolling movement in relation to the substantially plane internal surface, the pin imparts a rotary movement to the crank disc and hence to the shaft, and vice versa.

3,753,632
PUMP

Archie W. Mills, 2941 S. Michigan Ave., Chicago, Ill.

Filed Dec. 1, 1971, Ser. No. 203,551
Int. Cl. F04b *7/04*
U.S. Cl. 417—520 **5 Claims**



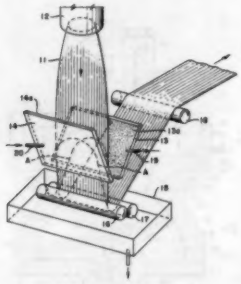
A novel pump for food or other material which comprises a cylindrical shaped housing which slidably receives therein a cylindrical shaped piston. A longitudinal portion of the piston is removed and engages a sliding valve which is mounted in the cylinder. The sliding valve is formed with a depression in which a projection of the piston extends such that when the projection engages the slide valve it moves it between intake and outlet ports. The pump requires no springs or valve actuating structures other than the piston itself and thus a simple and sanitary pump structure is formed.

3,753,633

TUBULAR WATER QUENCH APPARATUS WITH WATER FILM COOLING

Peter H. Van Kralingen, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 849,849, Aug. 13, 1969, Pat. No. 3,700,763. This application Jan. 20, 1972, Ser. No. 219,278
Claims priority, application Great Britain, Dec. 31, 1968, 61,899/68
Int. Cl. B29d *23/04*; B29c *17/07*
U.S. Cl. 425—71 5 Claims



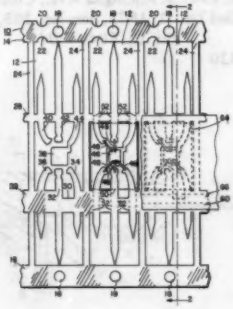
Film of an organic thermoplastic polymer is manufactured by drawing an extruded, inflated, hot, tubular film from an extruder and passing the film into contact with layers of cooling liquid supported by symmetrically disposed collapsing elements adapted to effect a partial but not complete collapse of the tubular film to the lay flat form, cooling liquid being simultaneously supplied to a plurality of locations distributed over the surfaces of the collapsing elements at a rate sufficient to maintain layers of cooling liquid thereon.

3,753,634

MOLDING MEANS FOR STRIP FRAME SEMICONDUCTIVE DEVICE

Thomas G. Bliven, 1834 N. 87th St., Scottsdale, Ariz., and John R. Hugill, 3617 E. Coolidge, Phoenix, Ariz.

Filed Oct. 9, 1970, Ser. No. 79,601
Int. Cl. B29c *1/00*; B29f *1/10*
U.S. Cl. 425—123 9 Claims



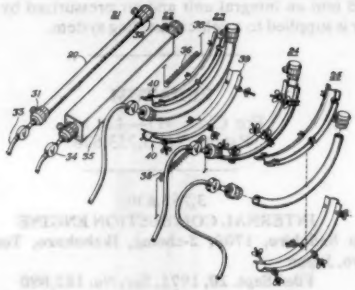
In the step of plastic encapsulation of a semiconductive device, the inner ends of a group of leads comprising part of a lead frame, the semiconductive chip and the connections between the chip and the inner ends of the leads, are put into a cavity of a mold and fluid encapsulating material is forced into the cavity to surround the elements that are in the cavity with encapsulating material. A lead frame, which may be supplied in strip form, is provided, a part of which is so formed as to act as a gate for the admission of fluid encapsulating material into the mold cavity.

3,753,635

APPARATUS FOR PRECISION BENDING OF PLASTIC PIPE

Louis H. Barnett, 3631 Encanto Dr., Fort Worth, Tex.

Filed Mar. 25, 1971, Ser. No. 127,931
Int. Cl. B29c *17/00*
U.S. Cl. 425—162 10 Claims



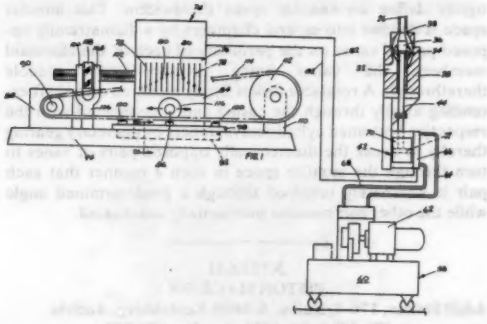
The specification discloses a process and system for bending plastic pipe to form a desired elbow. In one embodiment there is imposed a super atmospheric pressure within the interior of a segment of the pipe by applying a fluid pressure to the interior of the pipe. The segment of the pipe is heated to its softening temperature and then bent to a predetermined degree of bend while maintaining the fluid pressure on the interior wall to form an elbow with a minimum of distortion of the side walls. Bending is carried out in conformance with a jig. With the formed elbow in the jig, it is cooled while maintaining the fluid pressure on the interior walls. The fluid pressure then is removed and the elbow is released from the jig.

3,753,636

PHASE VARIATOR FOR BLOW MOLDING EQUIPMENT

William C. Waterloo, York, Pa., assignor to Graham Engineering Corporation, York, Pa.

Filed Mar. 12, 1971, Ser. No. 123,594
Int. Cl. B29d *23/04*
U.S. Cl. 425—163 19 Claims



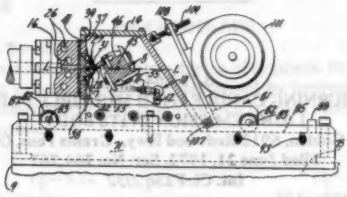
A phase variator for a blow molding machine to (1) adjust and orient the profile of a parison relative to movable mold cavities as they are positioned around the parison prior to inflating the parison, and (2) regulate the timing with which the variations in the profile (i.e. wall thickness) are imparted to the parison. Such regulations may be made and adjusted while the machine is operating.

3,753,637

COOLED-CUTTER HOT-DIE PELLETIZER

Joseph Gasior, Bloomfield, and Anthony W. Pomper, Edison, both of N.J., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 14, 1972, Ser. No. 225,993
Int. Cl. B29c 17/14
U.S. Cl. 425—313 8 Claims



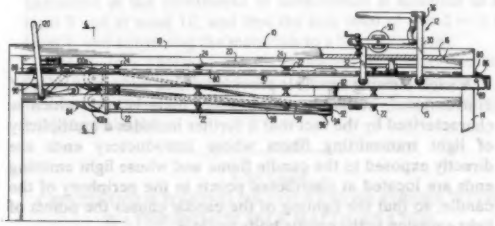
Described herein is apparatus for pelletizing thermoplastic extrudable materials utilizing a fish-tail type die and a rotating-cylinder type cutter wherein cooling of the cutter is effected without cooling of the die.

3,753,638

APPARATUS FOR SHEETING DOUGH

Naaman R. Simpson, 5801 S. 28th St., Fort Smith, Ark.

Filed May 18, 1971, Ser. No. 144,450
Int. Cl. A21c 3/02; B29c 3/02
U.S. Cl. 425—363 21 Claims



Sheeting dough on a horizontal table by operating a powered roller in horizontal planes back-and-forth over the dough while gradually moving the roller downwardly in horizontal planes towards the table to effectively work and spread the dough into a sheet of desired thickness and consistency. The roller is rotatably mounted through a linkage on a carriage which is reciprocable in tracks extending along opposite sides of the table. The carriage is driven by an endless chain connected through a pulley system to be driven thereby. The linkage which mounts the roller on the carriage is adjustable by a hand lever to change the elevation of the roller relative to the table while the roller is moving over the table in use. In one embodiment, an attachment is provided on the carriage for cutting the dough into pre-determined shapes after it is rolled into the desired thickness.

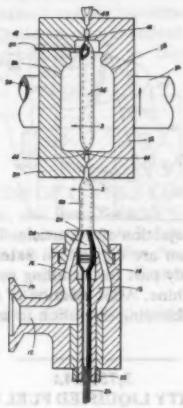
3,753,639

BLOW MOLDING DIE

William C. Waterloo, York, Pa., assignor to Graham Engineering Corporation, York, Pa.

Filed Mar. 12, 1971, Ser. No. 123,596
Int. Cl. B28b 11/08
U.S. Cl. 425—387 3 Claims

Dies for forming hollow articles by blowing into a plasticated synthetic resin parison in a mold cavity formed in a pair of supplementary dies which are provided with means operable adjacent one end of the die cavities to force a limited amount of the parison toward one end of the mold cavity to insure the forming in one end of a hollow molded article a seam produced by pinching one end of a section of the parison from



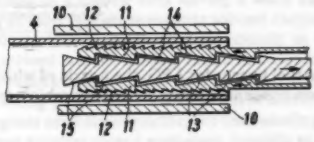
the oncoming supply thereof in such manner that the seam has a thickness no less than that of the portions of the article adjacent said seam.

3,753,640

APPARATUS FOR FORMING SYSTEM COMPONENTS OF EXTRUDED HOLLOW CHAMBER PROFILES

Hans-Werner Duepree, Osnabrueker Landstrasse 154, Avenwedde, Germany

Filed Sept. 3, 1971, Ser. No. 177,666
Int. Cl. B29c 23/00
U.S. Cl. 425—392 2 Claims



This disclosure teaches a structural system with extruded plastic members having hollow (preferably rectangular) profiles with their ends open. Connecting plugs are provided for engagement into the open ends for attachment to the members. Embossed toothing at the open ends interfacing the plugs and the members secure their attachment. Embossing devices are used to emboss the toothing on the internal and external surfaces.

3,753,641

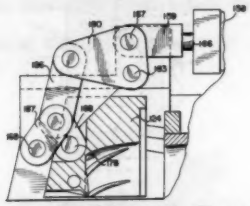
MOLD FOR ARTICLES HAVING UNDERCUT PORTIONS

Howard M. Turner, Oak Forest; Domas Adomaitis, Chicago, and Elmer J. Boik, Lombard, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,015
Int. Cl. B29c 1/16
U.S. Cl. 425—450 4 Claims

A partible mold has complementary body parts defining a principal portion of the mold cavity and at least one independently movable end part defining a cavity portion having undercuts relative to parting of the mold at the principal parting line. The end part is movable relative to the mold body in a

direction generally parallel to the principal parting line, the parting line between the separately movable end part and the associated body part being transverse to the principal parting line. The end part is retractable from the complementary body part to clear the undercut portions of the article for parting of



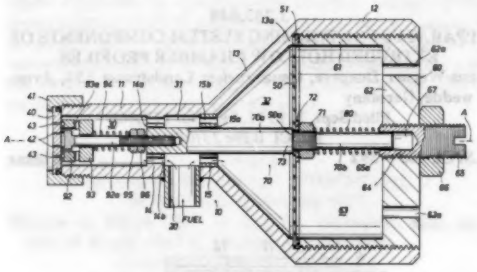
the body parts and ejection of the article. The end part and its actuating mechanism are carried on extension wings of the complementary body part for handling as a unit in an automatic molding machine. After ejection of the article, the end part is closed for clamping operation in association with the body of the mold.

3,753,642

HIGH-CAPACITY LIQUIFIED FUEL GAS BURNER

Guy Lamoureux, Grand-Couronne, France, assignor to Shell Oil Company, New York, N.Y.

Filed Apr. 27, 1972, Ser. No. 248,075
Int. Cl. F23n
U.S. Cl. 431—89 **9 Claims**



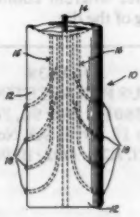
A liquid fuel burner for LPG, the nozzle of which comprises at least two concentric series of orifices which are opened in succession by withdrawing a corresponding series of obturating valves connected with pressure sensitive controlling means (e.g., a membrane). The opening of the various series of valves is automatically controlled by the pressure of the liquid fuel supplied to the nozzle. By providing for more than one series of discharge openings the ratio of max. to min. discharge rates is very high, thus enabling ignition at a low discharge rate.

3,753,643

WICK-BURNING CANDLE WITH MULTIPLE POINTS OF LIGHT EMISSION IN ITS BODY

Eddie R. Golden, 6912 Redwood Hwy., Grants Pass, Oreg.

Filed June 21, 1972, Ser. No. 264,767
Int. Cl. F23q *2/32*
U.S. Cl. 431—126 **5 Claims**



A wick-burning candle is provided which includes a body of conventional, moldable, combustible material and which is characterized by the fact that it further includes a multiplicity of light transmitting fibers whose introductory ends are directly exposed to the candle flame and whose light emitting ends are located at distributed points in the periphery of the candle, so that the lighting of the candle causes the points of light emission in the candle body to glow.

3,753,644

PROCESS FOR THE CONTINUOUS DYEING OF SYNTHETIC FIBRE MATERIALS

Rutger Neeff, Leverkusen, and Robert Kuth, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

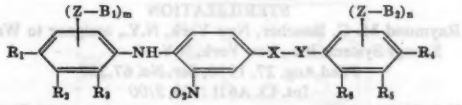
Filed June 29, 1970, Ser. No. 50,937

Claims priority, application Germany, July 24, 1969, P 19 37 666.0

Int. Cl. D06p *1/00*

U.S. Cl. 8—25 11 Claims

Process for the continuous dyeing of synthetic fibre materials from organic solvents, characterised by impregnating the fibre materials with dye liquors which contain nitro dyestuffs of the formula



in which R_1 – R_5 represent, independently of one another, a hydrogen, fluorine, chlorine or bromine atom, a hydroxyl, alkoxy, alkoxy-carbonyloxy, alkylcarbonyloxy, arylcarbonyloxy, aroxycarbonyloxy, nitro, cyano, phenoxy, acylamino, aminocarbonyl, aminosulphonyl, acyl, alkoxycarbonyl, aroxycarbonyl or a trifluoromethyl group, X is a $—SO_2—$ or —C-O— group, Y is —O— or —NH—, and Z is a single C—C bond or —O—, *m* and *n* are a number from 0 – 3, and B_1 and B_2 stand for a C_1 – C_6 alkyl, cycloalkyl or aralkyl radical, with the proviso that the sum total of the carbon atoms altogether contained in the substituent or substituents B amounts to at least 3 and at most 10, and that the sum total of *n* and *m* is at least 1, and subjecting the materials to a heat treatment.

The dyeings obtained are distinguished by a high dyestuff yield, very good texture as well as outstanding fastness properties, in particular, very good fastness to thermofixing, washing, rubbing and light.

3,753,645

CONTINUOUS DYEING OF POLYESTER FIBERS WITH WATER-IMMISCIBLE HALOGENATED HYDROCARBONS AND AMINO ANTHRAQUINONE DYESTUFFS

Rutger Neeff, Leverkusen; Peter Wegner, Cologne; Volker Hederich, Cologne, and Robert Kuth, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

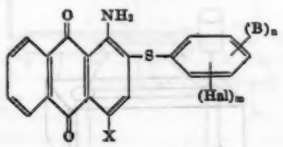
Filed July 30, 1970, Ser. No. 59,727

Claims priority, application Germany, Aug. 6, 1969, P 19 39 897.1

Int. Cl. C09b *1/02, 1/16, 1/56;* D06p *1/20*

U.S. Cl. 8—39 12 Claims

Process for the continuous dyeing of synthetic fiber materials from organic solvents, characterised in that the fibre materials are impregnated with dyeing liquids which contain anthraquinone dyestuffs of formula



in which Hal represents chloro or bromo, X represents hydrogen, hydroxy, amino or acylamino and B represents alkyl, cycloalkyl or aralkyl and wherein *m* is a number from 0 – 2 and *n* a number from 0 – 3 and subjecting the fibre materials subsequently to a heat treatment.

The dyeings obtained are distinguished by a high dyestuff yield, very good build-up and excellent fastness properties, especially very good fastness to thermofixing, washing, rubbing and light.

3,753,646

NEW PROCESS OF TEXTILE FABRICS DYEING

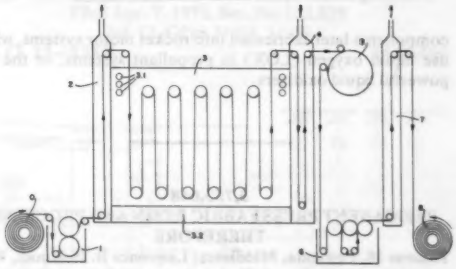
Willy Hess, Limas, and Jean-Francois Gamaury, Nogent sur Oise, both of France, assignors to Soltex, Paris, France

Filed July 28, 1970, Ser. No. 58,973

Claims priority, application France, July 30, 1969, 6925648; Jan. 12, 1970, 7001303

Int. Cl. C09b *67/00;* D06p *1/84*

U.S. Cl. 8—85 10 Claims



An anhydrous dyeing process comprising (*a*) achieving a fabric padding in a dyeing bath having a small capacity and containing at least one polar organic solvent chosen so that it dissolves the coloring agents used sufficiently at room temperature (solvent A); (*b*) defiling fabric in a closed enclosure filled with vapors of another solvent C, non-miscible with A, having a boiling point lower than solvent A and in which the coloring agents used are insoluble; (*c*) then sending the textile material into another closed enclosure, brought to the boiling temperature, of solvent C, in which solvent C is evaporated and recovered; (*d*) then, after cooling and quick rinsing in a convenient solvent to remove the non-fixed particles of coloring agents and residual quantities of solvent A, circulating the fabric in a last heated enclosure in order to remove and recover the rinsing solvent and finally winding the dyed fabric, ready for use.

3,753,647

LIQUID OXYGEN COMPATIBLE DYE PENETRANT METHOD FOR METAL DEFECT INSPECTION

Orlando G. Molina, Westminster, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

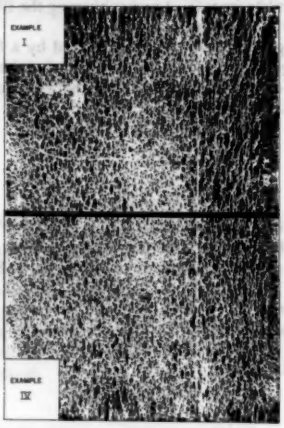
Filed Mar. 5, 1970, Ser. No. 16,803

Int. Cl. D06p *1/68*

U.S. Cl. 8—85 6 Claims

A liquid fluorescent dye penetrant containing a high volume concentration of a liquid halocarbon is taught as a very sensitive microdefect detector on metal surfaces. The dye penetrant is insensitive to chemical reaction or detonation

with liquid oxygen in a standard impact safety test. The liquid dye penetrant safety factor is important in inspection of metal



components later fabricated into rocket motor systems, which use liquid oxygen (LOX) in propellant systems, or the like powerful liquid oxidizers.

3,753,648

PERMANENT PRESS FABRIC RESIN AND PROCESSES THEREFORE

Thomas M. Powanda, Middlesex; Lawrence B. Holzman, West Orange, and James E. Tracy, Bernardsville, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 20, 1971, Ser. No. 135,778
Int. Cl. D06m *15/54*; C07d *51/42*
U.S. Cl. 8—115.7 **7 Claims**

2,7-dioxo-4,5-dimethyl-decahydropyrimido-[4,5-d]-pyrimidine is reacted with glyoxal and the resulting adduct methylolated with formaldehyde to produce the corresponding methylolated derivative which exhibits very desirable properties as a permanent press resin for fabrics.

3,753,649

TREATMENT OF KERATINOUS FIBRES AND FABRICS

Bryan Dobinson, Duxford; Derek James Rowland Massey, Linton; Kenneth Winterbottom, Whittlesford, and Brian Robinson, Meston, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland and I. W. S. Nominee Company Limited, London, England

Filed Feb. 10, 1971, Ser. No. 114,398
Claims priority, application Great Britain, Feb. 26, 1970, 9,477/70
Int. Cl. D06m *3/06, 15/00*
U.S. Cl. 8—127.6 **15 Claims**

This invention relates to a process for modifying keratinous material, and, in particular, to a process for rendering the material resistant to shrinkage and to a process for imparting durable press characteristics to the material. This process comprises treating the material with a resin having at least two thiol groups per molecule and containing a radical of a polyhydric alcohol, bound to this radical, at least two poly(oxyalkylene) chains, at least two radicals of a thiol-containing aliphatic carboxylic acid or of a thiol-containing aliphatic alcohol. As curing catalyst a sulfur-containing organic compound is used.

3,753,650

METHOD OF DYEING FIBERS

Shiro Shimauchi; Norihiro Minemura; Takeshi Matsui; Kenji Ito Osaka; Takeo Shima; Shoji Kawase, and Masataka Oshima, all of Iwakuni, Japan, assignors to Teijin Limited, Kita-ku, Osaka, Japan

Division of Ser. No. 804,294, March 4, 1969, Pat. No. 3,666,403. This application Feb. 29, 1972, Ser. No. 230,497
Int. Cl. D06p *5/04*
U.S. Cl. 8—171 **3 Claims**

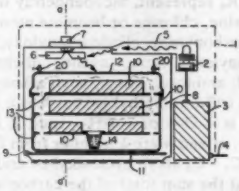
A method of dyeing a textile fiber selected from the group consisting of the modified polyester, polyvinyl chloride, polyacrylonitrile and cellulose acetate fibers, such method comprising dyeing the fibers with an anionic dyestuff in the presence of at least one compound selected from tertiary tributyl phosphine and triphenyl phosphine.

3,753,651

METHOD AND APPARATUS FOR SURFACE STERILIZATION

Raymond M. G. Boucher, New York, N.Y., assignor to Wave Energy Systems Inc., New York, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,337
Int. Cl. A61l *1/00, 3/00*
U.S. Cl. 21—54 R **16 Claims**



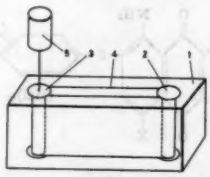
A method and apparatus for the rapid sterilization of a contaminated surface which involves the use of microwave energy fields combined with a humid atmosphere having a relative humidity of at least 50 percent. The material to be sterilized is placed into a self-sealed container at least partially transparent to microwaves. Said container is then introduced into an oven cavity. The moist atmosphere is confined inside the container walls. Through both thermal and non-thermal effects, surface decontamination by electromagnetic radiation takes place in a matter of minutes. The apparatus of the invention eliminates potential oven walls contamination and is entirely safe from the radiation view point. It can be operated by unskilled personnel.

3,753,652

METHOD OF RECORDING LIQUID FLOW OVER A SOLID SURFACE

Hans Ulrich Gassmann, Fribourg, and Ulrich Frauchiger, Marly, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 3, 1971, Ser. No. 112,155
Claims priority, application Switzerland, Feb. 13, 1970, 2135/70
Int. Cl. D06p *3/12*; G01n *33/00*; G03c *5/24*
U.S. Cl. 23—230 R **11 Claims**



This invention relates to a method of recording liquid flow over a solid surface: The solid surface is covered with a thin

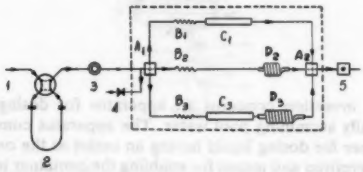
coating film which contains a diffusible substance. A liquid is caused to flow over the coated surface. The liquid contains in dissolved form a substance which reacts with said diffusible substance to yield a reaction product, preferably a colored reaction product, that is visible in the coating and sparingly soluble in the flowing liquid. The method is particularly useful for testing the conditions in photographic processing baths in a simple manner.

3,753,653

METHOD AND APPARATUS FOR GASEOUS-PHASE CHEMICAL REACTION ANALYSIS

Antonio Mario Brieva, Vicente Lopez, and Nestor Luis Soulages, LaPlata, both of Argentina

Filed Mar. 1, 1971, Ser. No. 119,681
Int. Cl. G01n *31/08, 31/12*
U.S. Cl. 23—230 R **18 Claims**



Method and apparatus for gas analysis by chemical reaction in the gas phase, and determination of the components by chromatographic detecting means, comprising the steps of injecting a sample into a gaseous carrier stream, dividing the sample-carrying gaseous carrier stream into at least two parts for being conveyed through independent supply branches, passing at least one of the branched streams through a chemical reactor for selectively modifying the composition of the sample, adjusting the residence of the parts in the branches to different times, and conveying the branched parts or streams into a passage leading to the detecting means, so that they will arrive there separately and without interference.

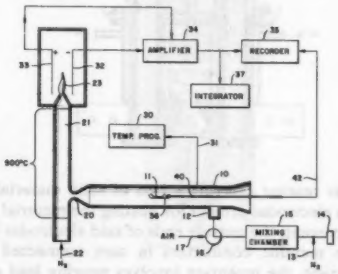
The invention also relates to an apparatus for carrying out the method, for analyzing the gases by chemical reaction and determination of the components by chromatographic detecting means.

3,753,654

METHOD FOR DETERMINING ORGANIC MATERIALS IN WATER

Frank T. Eggertsen, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 013,416, Feb. 24, 1970, abandoned. This application July 14, 1971, Ser. No. 162,691
Int. Cl. G01n *33/18, 25/20*
U.S. Cl. 23—230 PC **5 Claims**



A method for estimating the amount and volatility of organic materials in contaminated water samples wherein a sample of the contaminated water is moved into a heated furnace and the vapors swept directly into a flame-ionization detector.

3,753,655

PROCESS FOR ISOLATION AND SEPARATION OF THYROID HORMONES

Bernhard Schreiber; Gunter Knapp, both of Graz, and Hans Spitzy, Herrengasse, all of Austria

Filed Nov. 9, 1971, Ser. No. 197,133
Int. Cl. B01d *15/08*; C07c *101/72*; G01n *33/16*
U.S. Cl. 23—230 B **8 Claims**

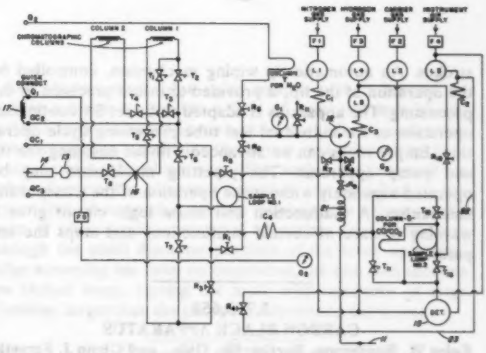
A process for isolating and separating the thyroid hormones triiodothyronine and thyroxine from blood serum which comprises first isolating the hormones from the serum by means of a mixed cationic-anionic dextran ion exchanger, and then separating the hormones from each other by the use of an anionic dextran ion exchanger. This procedure permits the satisfactory removal of interfering substances from the serum without decomposing the two thyroid hormones and can be used with advantage on a small scale, for example, in a clinical diagnostic kit.

3,753,656

GAS CHROMATOGRAPH

James H. Matson, Kent, Wash., and Robert Goings, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 7, 1971, Ser. No. 132,029
Int. Cl. G01n *31/08, 31/10*
U.S. Cl. 23—232 E **15 Claims**



The inventive gas chromatograph employs the response of a flame ionization detector to test air and liquid and gaseous oxygen and nitrogen for the presence and amounts of the following impurities: total hydrocarbons, individual hydrocarbons, carbon monoxide/carbon dioxide, water and freons. The invention is portable and may be used for quality control and quality assurance testing and has a sensitivity in the range of parts per million (ppm) by volume. The invention can accept a low pressure range of gases for analysis and is designed to sample fluids at cryogenic temperatures for a direct analysis from closed piping systems. The invention further utilizes two chromatographic columns, is designed to permit carrier gas backflushing of each of these columns and further features the backflushing of one column into the other column.

3,753,657

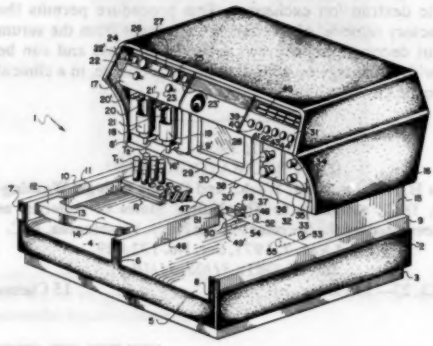
AUTOMATIC TEST TUBE TRANSPORTER AND SAMPLE DISPENSER HAVING SOLID STATE CONTROLS

Harvey T. Downing, Huntsville; Charles V. Lawson, Arab, and Byron E. Sturgis, Huntsville, all of Ala., assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed June 11, 1971, Ser. No. 152,189
Int. Cl. G01n *21/00*
U.S. Cl. 23—253 R **48 Claims**

An automatically controlled test tube transporter apparatus which advances a test tube rack containing two rows of recep-

tacles for test tubes under a vertically movable aspirating and dispensing tip or nozzle which is adapted to move down into adjacent tubes and aspirate or discharge depending on the test to be performed. The tip is operationally in communication with a twin pipette metering and dispensing apparatus which includes a linearly adjustable eccentric mechanism which drives the pipette pistons with a motion of adjustable sinusoidal amplitude. The apparatus includes a solid state control circuit which includes a binary shift register. The pipettes may be adjusted to either work in parallel or alternating



strokes. An automatic tip wiping mechanism, controlled by the operation of the tip, is provided to insure precision in the processing. The apparatus is adapted to be set for continuous operation or for individual test tube processing cycle operation. Empty racks can be advanced without engaging the tip and pump apparatus. The pipetting mechanism may be operated separately without the operation of the transporting mechanism. A malfunction and alarm logic circuit gives a warning in case of certain malfunctions and stops the apparatus.

3,753,658

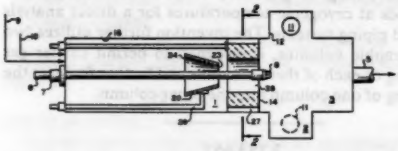
CARBON BLACK APPARATUS

Eulas W. Henderson, Bartlesville, Okla., and Glenn J. Forseth, Phillips, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 769,281, Oct. 21, 1968, Pat. No. 3,619,141. This application Mar. 15, 1971, Ser. No. 124,494

Int. Cl. C09c *1/50*; F23c *5/06*

U.S. Cl. 23—259.5 **7 Claims**



A carbon black reactor which comprises an axial zone, a combustion zone and a carbon black producing zone in contiguous alignment, said axial zone having choke means slidably positionable therein, said choke means having an axial passageway therethrough, and at least one aperture providing open communication between the downstream end of said choke and the upstream end of said choke.

3,753,659

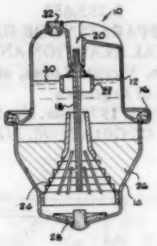
DOSING OF LIQUIDS

Johann Nicolaas Raubenheimer, Bedfordview, Republic of South Africa

Claims priority, application South Africa, Mar. 2, 1970, 1366

Int. Cl. B01d *11/02, 15/02, 59/24*; E03d *3/16, 3/18*

U.S. Cl. 23—267 A **8 Claims**



This invention concerns an apparatus for dosing liquids especially swimming pool water. The apparatus comprises a container for dosing liquid having an outlet as the only open part therefrom and means for enabling the container to be surrounded by liquid to be dosed. The container may be a transparent container immersed in the liquid to be dosed.

3,753,660

HEATER FOR TUBE REACTORS

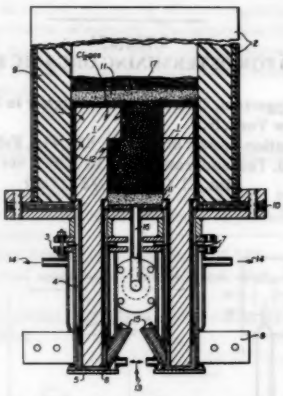
Ferdinand Langenhoff, Ranzel; Erich Termin, Laufenburg; Otto Bleh, Bergheim, Sieg, and Rico Kolb, Ranzel, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Postfach, Germany

Filed Nov. 20, 1970, Ser. No. 91,408

Claims priority, application Germany, Sept. 16, 1969, P 19 46 718.6

Int. Cl. H05b *3/66*; B01d *1/00*

U.S. Cl. 23—277 R **3 Claims**



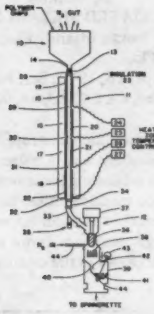
In a tubular reactor carrying a bed of solid material into which carbon electrodes project for heating the material upon passage of a current, the outside ends of said electrodes being connected to metallic conductors in turn connected to a supply of current, the invention involves pouring lead about the end of each electrode to effect improved contact between the electrode and its respective metallic conductor. The process involving use of such electrodes to react carbon with chlorine and the oxide of silicon or metals such as vanadium, titanium or zirconium is also covered.

3,753,661

APPARATUS FOR THE PREPARATION OF FILAMENTARY MATERIAL

Frank Holmes Simons, Matthews, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Continuation of Ser. No. 857,257, July 23, 1969, abandoned.
This application Feb. 8, 1971, Ser. No. 113,597
Int. Cl. C08g 35/00
U.S. Cl. 23—285 2 Claims



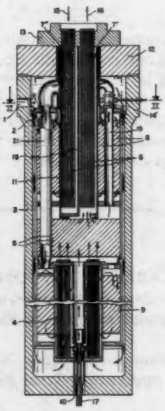
Apparatus for the manufacture of linear condensation polymers of increased relative viscosity employing in combination a means for feeding pre-formed particulate polymeric material of lower viscosity to a heating means which heats the material to a temperature lower than its melting point and subsequently passing the heated particulate material to a melting means for melting the particulate material whereby the melted material can be extruded.

3,753,662

SYNTHESIS REACTOR WITH PARTICULAR COOLING MEANS FOR EXOTHERMIC REACTIONS AT HIGH PRESSURE

Giorgio Pagani, and Giorgio Gramatica, both of Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 675,988, Oct. 17, 1967, abandoned.
This application Nov. 3, 1970, Ser. No. 86,413
Claims priority, application Italy, Oct. 18, 1966, 28,961 A/66
Int. Cl. B01j 9/04
U.S. Cl. 23—289 7 Claims



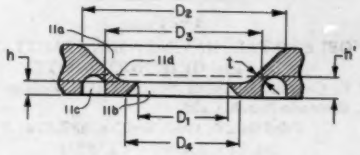
Apparatus for high pressure-exothermic and catalytic reactions in the gaseous phase, for instance the synthesis of ammonia or methanol, has a substantially cylindrical shape and contains more than one superimposed catalyst bed and a cooling heat exchanger of the tube bundle type, the tube bundle is contained in a substantially cylindrical and coaxial shell and is longitudinally and completely partitioned into first and second separate halves by a plane baffle which substantially contains the axis of said tube bundle. The outlet opening on the shell side of the first half is directly connected to the inlet of a first catalyst bed. The inlet opening on the shell side of the second half is directly connected to the outlet of said first catalyst bed. The outlet opening on the shell side of the second half is directly connected to the inlet of a subsequent catalyst bed.

3,753,663

BLANK FOR SHADOW MASK FOR COLOR TELEVISION PICTURE TUBE

Joseph M. Black, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 850,408, Aug. 15, 1969, Pat. No. 3,653,900. This application Oct. 7, 1971, Ser. No. 187,487
Int. Cl. B21c 37/00
U.S. Cl. 29—190 5 Claims



The shadow mask of a color picture tube is formed by etching a blank to provide a field of apertures individually having a large diameter portion and a coaxially aligned, small diameter portion attached to the former by a thin wall section. In screening a tube which is to utilize such a shadow mask for color selection, the phosphor materials are deposited on the screen in a photographic process involving the exposure of a layer of photosensitive material by actinic energy directed through the small diameter portions of the mask apertures. After screening has been accomplished, the thin wall sections are etched away, leaving the mask with apertures of large diameter, larger than the phosphor deposits on the screen.

3,753,664

HARD IRON ELECTROPLATING OF SOFT SUBSTRATES AND RESULTANT PRODUCT

Otto J. Klingenmaier, Warren, and John T. McWatters, Roseville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1971, Ser. No. 202,014
Int. Cl. C23b 5/04, 5/50; B23p 3/22
U.S. Cl. 29—191 4 Claims

Substrates having low surface strengths are plated with high stress iron by first depositing a layer of low stress iron on the substrate before plating the high stress iron. The low stress iron layer acts like a buffer to mitigate the surface disruptive affects of the high stress iron on the substrate.

3,753,665

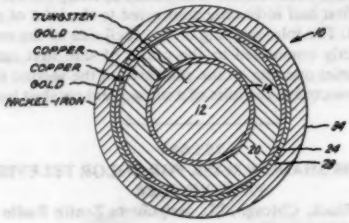
MAGNETIC FILM PLATED WIRE

Richard O. McCary, and Fred E. Luborsky, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 658,942, Aug. 7, 1967, abandoned.
This application Nov. 12, 1970, Ser. No. 89,002
Int. Cl. B21f 19/00; C23b 5/58
U.S. Cl. 29—191.6 5 Claims

A small diameter magnetic film plated wire for memory devices is constructed utilizing an inner core selected from the

group consisting of tungsten and molybdenum. In a preferred embodiment of the magnetic film plated wire, a tungsten core is successively overlaid with a gold strike layer, a rapidly



deposited relatively thick copper conductive layer, a slowly deposited smooth copper layer, a gold layer and a circumferentially oriented magnetic nickel-iron film.

3,753,666

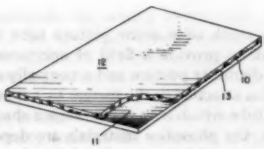
NOBLE METALS HAVING A HIGH EMITTANCE COATING OF IRON TITANATE

David F. Carroll, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 4, 1967, Ser. No. 687,594

Int. Cl. C23c *5/00*; C23d *5/10*

U.S. Cl. 29—195 **5 Claims**



A method of applying a high-emittance coating to the noble metals and intra-alloys thereof, the coating being applied by plasma arc spraying iron titanate powder on the surface of the noble metal.

A substrate of a noble metal or intra-alloy thereof having a high emittance coating of iron titanate bonded thereon.

3,753,667

ARTICLES HAVING ELECTROLESS METAL COATINGS INCORPORATING WEAR-RESISTING PARTICLES THEREIN

Willy Metzger; Rudi Ott; Gunter Pappe, and Helmut Schmidt, all of Solingen-Merscheid, Germany, assignors to General American Transportation Corporation, Chicago, Ill.

Division of Ser. No. 698,127, Jan. 16, 1968, Pat. No. 3,617,129. This application Sept. 28, 1970, Ser. No. 76,273

Int. Cl. B32b *15/00*

U.S. Cl. 29—195 **23 Claims**

There are disclosed processes for electroless metallizing workpieces to provide thereon a metal coating incorporation therein non-metallic wear-resisting particles and the coated workpieces produced by such processes, the processes comprising contacting the workpieces with an electroless metallizing bath consisting of an aqueous solution of a metal salt and an electroless reducing agent therefor and a quantity of non-metallic wear-resisting particles, wherein the particles are essentially insoluble in the plating bath and are non-catalytic and inert with respect thereto, the particles being present in the bath in an amount by weight no greater than about four times the weight of the metal in the bath expressed as free metal, and maintaining the particles in suspension throughout the bath during the metallizing of the workpiece; the electroless coating with the wear-resisting particles therein may be heat treated by heating to an elevated temperature in the range 100°C. to 600°C. for one hour or more further to harden the coating.

3,753,668

DIFFUSION COATED METALLIC SUBSTRATE

Howard D. Flicker, North Miami, Fla., assignor to API Corporation, Miami, Fla.

Filed Apr. 16, 1970, Ser. No. 29,303

Int. Cl. C23c *3/04, 9/00*

U.S. Cl. 29—196 **7 Claims**

A diffusion coated metallic substrate is formed by providing a coating metal or element and a balancing metal or element on the substrate and adjusting the amount of the coating and balancing elements or metals so that the resulting coating has a coefficient of thermal expansion approximately the same as the substrate. A large atomic volume element is included in the coating to fill void flaws in the coating.

3,753,669

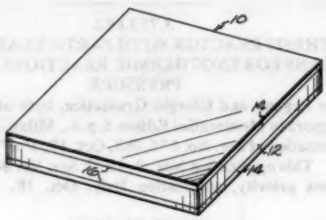
COINAGE MATERIALS

Richard L. Churchill, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 22, 1971, Ser. No. 210,656

Int. Cl. B23p *3/00, 3/06*

U.S. Cl. 29—199 **10 Claims**



Novel and advantageous metal laminates of low cost, non-magnetic materials, and coins made from the laminates, comprise outer cladding layers of coin silver or cupronickel metallurgically bonded to opposite sides of a core layer of nickel silver to provide substantially uniform color along the edges of the laminates and coins and to provide the coins with properties useful in coinage discrimination.

3,753,670

HYDROCARBON FUEL COMPOSITIONS

Aart Strang, Amsterdam, Netherlands, and Isaac C. H. Robinson, Chester, England, assignors to Shell Oil Company, New York, N.Y.

Filed June 30, 1970, Ser. No. 51,363

Claims priority, application Great Britain, June 30, 1969, 32906/69

Int. Cl. C10l *1/22*

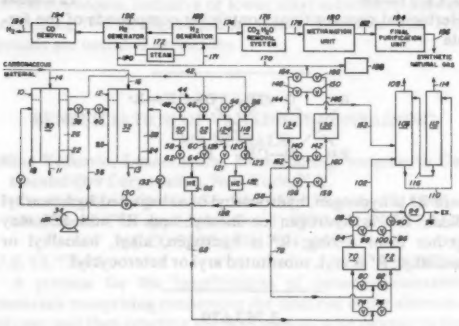
U.S. Cl. 44—72 **4 Claims**

Liquid hydrocarbon fuel compositions, especially gasolines, containing certain hydrocarbyl polyamines, effectively nullify and/or inhibit fouling of vital parts of internal combustion engines.

3,753,671
PRODUCTION OF SYNTHETIC NATURAL GAS AND HYDROGEN FROM THE GASIFICATION OF CARBONACEOUS MATERIALS

Lawrence E. Leas, Simi, Calif.; Robert L. Leas, and Cecil J. Johnson, Columbia City, Ind., assignors to Leas Brothers Development Corporation, Columbia City, Ind.

Filed July 9, 1971, Ser. No. 161,196
Int. Cl. C10j 3/04
U.S. Cl. 48—210 7 Claims

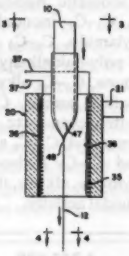


A method of producing synthetic natural gas using the gasification products of coke, coal, or other carbonaceous materials.

3,753,672
METHOD FOR FORMING GLASS FIBERS

Lawrence E. Curtiss, Englewood, N.J., assignor to Basil I. Hirschowitz and C. Wilbur Peters, Ann Arbor, Mich., part interest to each

Division of Ser. No. 657,325, May 6, 1957, Pat. No. 3,589,793. This application June 28, 1971, Ser. No. 157,585
Int. Cl. C03c 25/02; C03b 5/26
U.S. Cl. 65—3 6 Claims

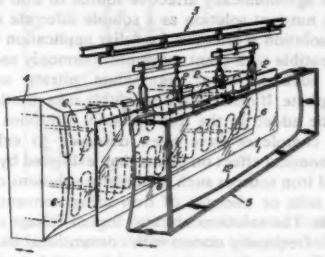


A method of forming an optical light transmitting glass coated glass fiber from a clear optical solid first glass body having a predetermined index of refraction and a second glass body surrounding the first glass body and having a lower index of refraction than the first body comprising: in one continuous step heating adjacent ends of the two glass bodies to a temperature, where the glass is sufficiently plastic to be drawn, and drawing glass from the heated ends while maintaining their temperature substantially constant to form a fiber comprising a continuous glass core of one predetermined index of refraction and a continuous glass coating of a lower index of refraction which is fused with the core in one solid mass and is adapted to prevent light from escaping from the core into the coating.

3,753,673
PRESS BENDING OF GLASS SHEETS

John Pickard, Studley, and Thomas Cartledge, Teesside, both of England, assignors to Triplex Safety Glass Company Limited, London, England

Filed July 2, 1969, Ser. No. 838,612
Claims priority, application Great Britain, July 12, 1968, 33,394/68
Int. Cl. C03b 23/02
U.S. Cl. 65—106 7 Claims

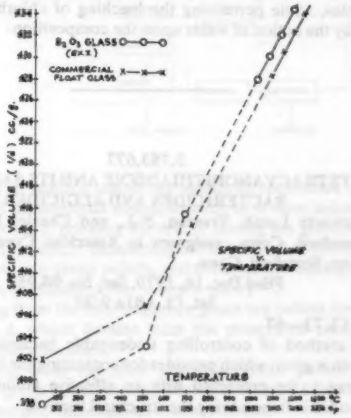


A glass sheet is bent to a required curvature between two relatively movable complementary bending dies which deform the glass sheet, which is heated to a temperature at which it is pliable. The respective overall heat losses from the two major surfaces of the glass sheet are adjusted during the bending operation so as to be substantially equal. For example, heat loss to one die may take place predominantly by conduction and the temperature of this die may be controlled, by means of heaters, to regulate the conductive heat loss associated with this die and effect the required heat loss balance.

3,753,674
THERMAL TEMPERING OF GLASS HAVING SHORT STRAIN POINT-TO-SOFTENING POINT INTERVAL

Stanley M. Ohlberg, Pittsburgh, and Leighton E. Orr, Tarentum, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 10,641, Feb. 11, 1970, abandoned. This application Jan. 18, 1971, Ser. No. 107,353
Int. Cl. C03b 27/00
U.S. Cl. 65—114 5 Claims



Thermal tempering propensity of alkali-alkaline earth-silica glass can be enhanced by changing the chemical composition such that the temperature interval between the softening point and the strain point is decreased. Addition of B_2O_3 and/or TiO_2 in commercial alkali-alkaline earth-silica glass yields the above-mentioned result.

3,753,675

FERTILIZER SOLUTIONS CONTAINING SOLUBLE IRON COMPLEXES

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 12,129, Feb. 17, 1970, Pat. No. 3,679,377
Filed Apr. 28, 1972, Ser. No. 247,450
Int. Cl. C05d 9/02
U.S. Cl. 71—1 10 Claims

An agronomically effective source of iron is provided in a plant nutrient solution as a soluble diferrate complex anion. The solution is effective for foliar application to plants and is compatible with plant nutrients commonly used for fertilization such as urea, ammonium nitrate and ammonium phosphate. If desired, water soluble salts of other trace metals can be added to the iron solution. Solutions containing the iron complexes have been observed to exhibit a greater agronomical effect on plants than exhibited by use of conventional iron sources such as aqueous solutions of water soluble iron salts or chelates of iron using conventional chelating agents. The solutions are also free of foliage or fruit spotting which frequently occurs with conventional iron sources. In a specific embodiment, a solution is provided which is effective for the foliar fertilization of pineapple and which contains a soluble ferric sulfatohydroxyl complex dissolved in ammonium nitrate or urea.

3,753,676

WATER TREATMENT COMPOSITION INCLUDING SYNTHETIC WAX

James L. Hailey, Fulton County, Ga., assignor to Tesco Chemicals, Inc., Atlanta, Ga.

Filed Aug. 18, 1971, Ser. No. 172,923
Int. Cl. A01n 9/00, 11/00
U.S. Cl. 71—67 3 Claims

A water treatment composition comprising a water soluble chlorine containing compound or blend of compounds, optionally cyanuric acid, a water insoluble fatty diamide synthetic wax, and optionally a molding lubricant is effective in inhibiting the growth of bacteria, algae and other plant life in water when the composition is blended together and shaped into dosage unit form. The composition maintains its configuration during exposure to water and retains undesirable insolubles, while permitting the leaching of chlorine from the unit by the action of water upon the composition.

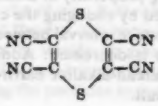
3,753,677

TETRACYANODITHIADIENE AND ITS SALTS AS BACTERICIDES AND ALGICIDES

Glentworth Lamb, Trenton, N.J., and Charles Frank Hinz, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 16, 1970, Ser. No. 98,958
Int. Cl. A01n 9/20
U.S. Cl. 71—67 3 Claims

A method of controlling undesirable bacteria and algae growth is given which provides for contacting the infested area or area to be protected with an effective amount of tetracyanodithiadiene having the structural formula:



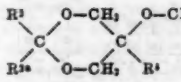
3,753,678

SUBSTITUTED DIOXANES AS HERBICIDES

Sanford Tyler Young, Lockport, N.Y., and Kenneth Lee Hill, Doylestown, Pa., assignors to FMC Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 699,204, Jan. 19, 1968, abandoned, and a continuation-in-part of Ser. No. 868,278, Oct. 9, 1969, abandoned, and a continuation-in-part of Ser. No. 182,400, Sept. 21, 1971, abandoned. This application Feb. 9, 1972, Ser. No. 224,909
Int. Cl. A01n 1/24
U.S. Cl. 71—88 12 Claims

Herbicidal compositions containing compounds of the formula



where R^2 is hydrogen, hydrocarbyl or substituted hydrocarbyl radical; R^{2a} is hydrogen or methyl and R^2 and R^{2a} may together form a ring; R^3 is hydrogen, alkyl, haloalkyl or cyanoalkyl; R^r is aryl, substituted aryl or heterocyclyl.

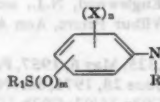
3,753,679

HERBICIDAL S-ARYL ARYLAMIDES AS HERBICIDES

Gopal H. Singhal, Westfild, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Division of Ser. No. 726,567, May 3, 1968, Pat. No. 3,576,872. This application Jan. 4, 1971, Ser. No. 103,852
Int. Cl. A01n 9/12
U.S. Cl. 71—98 7 Claims

S-aryl arylamides characterized by the following formula:



where R_1 is unsubstituted C_6–C_{10} aryl or substituted C_6–C_{14} aryl having one or more of the following groups situated anywhere along its aromatic nucleus or nuclei: halogen, cyano, nitro, amino, C_1–C_8 monoalkylamino, C_2–C_8 dialkylamino, C_2–C_8 alkylamido, C_1–C_8 alkoxy, C_2–C_4 alkenyl, and C_2–C_4 mono- and poly-haloalkenyl, etc.; X is one or more of the following: halogen, C_1–C_8 alkyl, C_1–C_8 alkoxy, C_1–C_8 mono- and polyhaloalkyl, amino, C_1–C_8 monoalkylamino, C_2–C_8 dialkylamino, nitro, cyano, etc.; m is 0–2; n is 0–4; R is hydrogen, C_1–C_3 hydrocarbyl, C_1–C_8 alkoxy, etc.; and R_2 is H, C_3–C_8 cycloalkyl, and C_1–C_8 hydrocarbyl, optionally substituted by halogen, hydroxy, alkoxy, thioalkyl, etc., have been found to possess herbicidal activity.

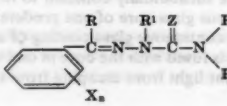
3,753,680

ARYLIDENE SEMICARBAZONES AND THEIR UTILITY AS HERBICIDES

Harry Tilles, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 773,657, Nov. 5, 1968, abandoned. This application May 14, 1970, Ser. No. 48,733
Int. Cl. A01n 9/20
U.S. Cl. 71—120 34 Claims

Substituted-arylidene semicarbazone having the formula:



in which Z represents oxygen, X represents halogen, lower alkoxy, lower alkyl, hydroxyl, nitro, cyano, N-allylcarbamoyloxy, lower-dialkylthiophos-phoryloxy, N-lower alkylcarbamoyloxy, lower dialkylamino, or $(CH_3)_3N^+I^-$; *n* represents an integer of from 0 to 3, inclusive; R represents hydrogen or lower alkyl; R^1 represents hydrogen or lower alkyl; R^2 represents, lower alkyl or allyl; R^2 represents hydrogen, alkyl, allyl, furfuryl, tetrahydrofurfuryl, lower alkoxy lower alkyl, cyclohexyl, 2-chloroallyl, phenyl, benzyl, or substituted-phenyl in which the substituents are chloro or nitro; R^2 and R^3 when taken together represent an alkylene containing four to six carbon atoms, inclusive or lower alkyl substituted alkylene containing five to eight carbon atoms, inclusive. The compounds are useful as herbicides.

3,753,681

BENEFICIATION OF VANADIUM-CONTAINING MATERIALS

Milos Vojkovic, Luxembourg, Luxembourg, assignor to Continental Ore Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 755,431, Aug. 26, 1968, abandoned. This application Oct. 1, 1970, Ser. No. 77,315

Int. Cl. C22b *1/00, 7/04, 55/00*

U.S. Cl. 75—1 **13 Claims**

A process for the beneficiation of vanadium-containing materials comprising preheating the material in the absence of oxygen and then reacting the hot material with oxygen to yield soluble vanadium compounds.

3,753,682

PORTED ROTARY KILN PROCESS FOR DIRECT REDUCTION OF OXIDES OF METALLIC MINERALS

Robert F. Kohl, Shorewood, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Sept. 18, 1970, Ser. No. 73,389

Int. Cl. C21b *1/08, 1/02, 13/14*

U.S. Cl. 75—3 **8 Claims**

A process is disclosed for prereducing metallic oxide and sulfide ores to a lower state of oxidation without passing through a liquid phase, at an accelerated rate. The ore particles are preheated to 1,800° or above. An unreformed hydrocarbon fuel such as natural gas (CH_4) substantially free of any oxidizing agents is passed into a bed of such preheated ore particles to pyrolytically decompose and reform portions of the fuel into strong reducing agents while in intimate contact with the oxidic metal to be reduced. Such forming of reducing agents cause at least some ore to very quickly reduce to a lower state of oxidation with an attendant solid state reorientation of metal and/or sulfur and oxygen atoms. The atomic reorientation provides increased porosity, and greater surface area is exposed to the strong reducing agents for additional and continued reduction. Portions of as yet unreformed fuel in the bed are rapidly reformed by continued pyrolysis and by reacting with oxygen and/or sulfur from the ore, to provide additional quantities of strong reducing agents.

3,753,683

METHOD AND APPARATUS FOR CARBONIZING AND DESULFURIZING COAL-IRON COMPACTS

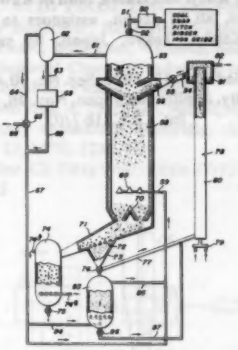
Joseph Vlnaty, Aliquippa, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 49,660, June 25, 1970. This application Dec. 28, 1970, Ser. No. 101,990

Int. Cl. C21b *1/08;* **C10b** *57/00;* **C01b** *17/06*

U.S. Cl. 75—3 **17 Claims**

Method and apparatus for preparing compacts of an iron and carbonized coal having a low sulfur content. Coal and iron oxide or metallic iron are formed into compacts, heated, and contacted within an enclosed reactor with a gas containing elemental hydrogen. Hydrogen sulfide is formed by reaction of the hydrogen with sulfur in the compacts and off-gasses are formed from this reaction and from carbonization of the coal. The hydrogen sulfide is separated from the off gases and a portion of the off gases returned to the enclosed reactor. Desulfurized compacts are discharged from the reactor and contain carbonized coal and iron metal, the compacts being low in sulfur content and especially useful in metallurgical processing.



3,753,684

METHOD FOR THE MANUFACTURING OF BAKED ORE PELLETS

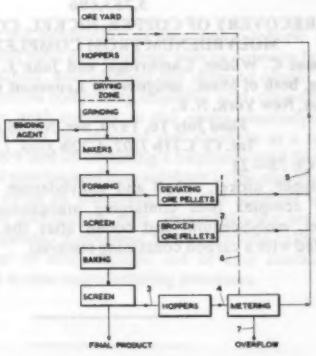
Anthonie Van Latenstein, Sanipoori, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens en Staalfabriken N.V., Ijmuiden, Netherlands

Filed Aug. 30, 1971, Ser. No. 176,038

Claims priority, application Netherlands, Aug. 31, 1971, 7112875

Int. Cl. C21b *1/00*

U.S. Cl. 75—3 **4 Claims**



A method of making baked ore pellets of prescribed composition and dimensional characteristics in a flow sequence which comprises a. grinding the ore, b. mixing the ground ore with a binding agent, c. moistening the mixture, d. forming the moist mixture into green pellets, and e. thereafter baking such green pellets in a baking zone, is improved by

f. diverting from the flow sequence green ore pellets formed in step d. which deviate from the prescribed compositional characteristics,

g. diverting from the flow sequence green pellets and broken green pellets formed in step d. which deviate from the prescribed dimensional characteristics,

h. diverting from the flow sequence baked pellets and broken baked pellets formed in step e. which deviate from the prescribed dimensional characteristics,

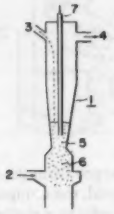
i. forming a combined flow of the green and baked materials diverted in steps f., g. and h., and j. mixing the combined flow with fresh ore to constitute the ore being ground in step a.

3,753,685

GAS BLOWING METHOD INTO FLUIDIZED BED

Osamu Tajima; Kouji Moriyama, both of Kawasaki, and Daizo Kunii, Tokyo, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan, by said Tajima and Moriyama

Filed Nov. 17, 1970, Ser. No. 90,413
Claims priority, application Japan, Nov. 28, 1969, 44/95150
Int. Cl. C21b *1/02*
U.S. Cl. 75—9 1 Claim



A method of blowing reactant gas into a fluidized bed wherein a feeding pipe is inserted from the upper part of the fluidized bed so as to blow the reactant gas in position most effective for reaction.

3,753,686

RECOVERY OF COPPER, NICKEL, COBALT AND MOLYBDENUM FROM COMPLEX ORES

Thomas C. Wilder, Cambridge, and John J. Andreola, Reading, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed July 16, 1970, Ser. No. 55,608
Int. Cl. C21b *1/02*; C22b *3/00*, *15/18*
U.S. Cl. 75—21 8 Claims

Copper, nickel, cobalt and molybdenum may be leached from complex ores containing manganese, iron, copper, nickel, molybdenum, and cobalt after the complex ore is roasted with a carbon containing material.

3,753,687

A PROCESS OF TREATING IRON OXIDE PELLETS WITH A CHLORIDE AND PRODUCING IRON PELLETS THEREFROM

Conrad B. Bare, Coopersburg, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 7, 1970, Ser. No. 95,936
Int. Cl. C21b *13/08*
U.S. Cl. 75—33 5 Claims

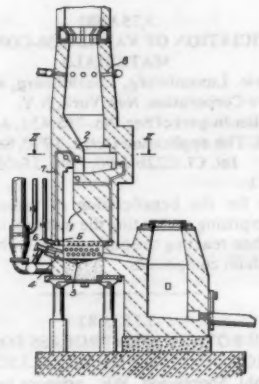
Balled iron ore concentrates which have been soda-roasted and leached to extract non-ferrous metal values, such as vanadium and chromium, therefrom are soaked in an aqueous solution of ferrous chloride ($FeCl_2$) or waste hydrochloric acid pickle liquor or calcium chloride ($CaCl_2$) for a time sufficient to saturate the partially hardened pellets. The pellets, a carbonaceous reducing agent and a desulfurizing agent are charged into a furnace. The charged materials are heated to a temperature, for example, about 2,050° F., for a time in a reducing atmosphere to reduce a substantial portion of the iron oxide therein to metallic iron.

3,753,688

METHOD OF MELTING METAL

Anatoly Alexeevich Cherny; Vladimir Alexandrovich Grachev, both of Penza; Lev Mikhailovich Marienbakh, Moscow; Ivan Lukich Kurbatsky, Penza; Stepan Frolovich Fomin, Penza; Efim Davidovich Sosnovsky, Penza, and Nikolai Semenovich Pavlenko, Penza, all of U.S.S.R.

Continuation of Ser. No. 29,773, April 28, 1970, abandoned, which is a continuation of Ser. No. 658,472, Aug. 4, 1967, abandoned. This application Feb. 22, 1972, Ser. No. 228,248
Claims priority, application U.S.S.R., Aug. 6, 1966, 1096478
Int. Cl. C21b *11/02*, *13/02*
U.S. Cl. 75—43 4 Claims



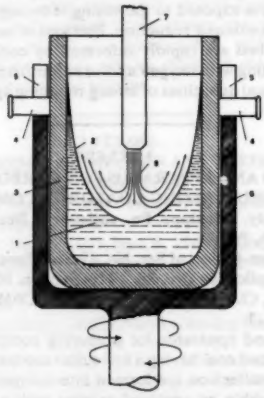
Metals are melted in a gas cupola furnace by introducing a hydrocarbon such as natural gas to the high temperature regions of the furnace, preferably after preheating the hydrocarbon.

3,753,689

PROCESS FOR OBTAINING A RAPID MIXING OF LIQUID METALS AND SLAG IN ORDER TO ACCELERATE SOME REACTIONS BETWEEN THE TWO PHASES

Aldo Ramacciotti, Rome, Italy, assignor to Centro Sperimentale Metallurgico SpA, Rome, Italy

Filed June 25, 1970, Ser. No. 49,782
Claims priority, application Italy, July 1, 1969, 19000 A/69
Int. Cl. C21c *7/00*, *7/06*
U.S. Cl. 75—51 8 Claims



A process for emulsifying the constituents of a molten bath found in metallurgical refining applications. Immiscible con-

stituents are delivered to a stationary reactor; the reactor is rotated about the vertical axis thereof; rotation is ceased for less than thirty seconds; and rotation of the reactor about the vertical axis occurs in the opposite direction. Gases are blown axially at and over the surface of the molten bath to provide a particular gaseous atmosphere.

3,753,690

TREATMENT OF LIQUID METAL

Edward Frederick Emley, Chalfont St. Giles, and Malcolm Victor Brant, Stoke Poges, both of England, assignors to The British Aluminium Company Limited, Gerrards Cross, England

Continuation-in-part of Ser. No. 835,872, June 2, 1969, abandoned. This application Sept. 10, 1970, Ser. No. 71,112

Claims priority, application Great Britain, Sept. 12, 1969, 45,163/69

Int. Cl. C22b *21/06, 9/10*

U.S. Cl. 75—68 R **14 Claims**

A process for removing non-metallic constituents in molten metal, particularly aluminium and its alloys. In one treatment the metal is flowed through a multiplicity of flux-lined channels which are conveniently provided by a bed of flux-coated granules of a size such that the channels are large enough not to become clogged during use. In another treatment the metal is degassed by continuously passing it through a containing vessel while passing a substantially inert gas such as nitrogen therethrough under a flux cover; this can be followed by passing the metal through the flux-lined channels.

3,753,691

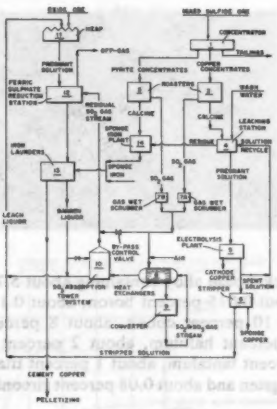
PROCESS FOR EXTRACTING COPPER FROM SULFIDE ORES

Kenneth M. Grover, Pound Ridge, N.Y.; George B. Knecht, and John J. Tully, both of Stamford, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Jan. 14, 1970, Ser. No. 2,891

Int. Cl. C22b *15/08*

U.S. Cl. 75—101 R **10 Claims**



A process for extracting nonferrous metal values from ores by leaching said ores with an aqueous sulphuric acid solution produced by absorbing sulphur trioxide in barren leach liquor coming from hydrometallurgical operations. The process provides wet scrubbing a sulphur dioxide bearing gas, catalytically oxidizing at least a portion of the moisture laden scrubbed sulphur dioxide bearing gas to produce a gas stream containing controlled amounts of sulphur dioxide and sulphur trioxide, absorbing the sulphur trioxide values in barren leach liquor to produce aqueous sulphuric acid for leaching said ores and utilizing said sulphur dioxide values to reduce ferric sulphate to ferrous sulphate present in the pregnant solution resulting from said acidic leaching operation.

3,753,692

PROCESS FOR THE COPRODUCTION OF ZINC AND SULPHURIC ACID FROM ZINC SULPHIDE ORES

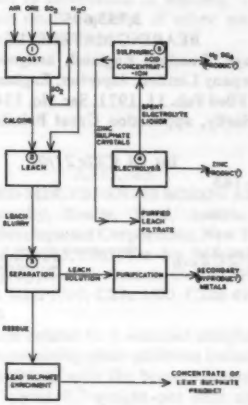
Kenneth Arthur Bourchier, Bundoora, Victoria, and Donald Fergusson Stewart, Doncaster, Victoria, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Victoria, Australia

Filed Aug. 4, 1970, Ser. No. 60,908

Claims priority, application Australia, Aug. 20, 1969, 59791/69; May 21, 1970, 1283/70

Int. Cl. C01g *9/00;* **C01b** *17/72*

U.S. Cl. 75—115 **4 Claims**



A process for the production of zinc and sulphuric acid comprising leaching solid zinc sulphate with an aqueous liquor to form a leach liquor, electrolysing the latter to obtain zinc and a spent electrolyte comprising sulphuric acid, concentrating the sulphuric acid content in the spent electrolyte to precipitate the bulk of the residual zinc sulphate as a solid, separating the latter and so obtaining a sulphuric acid filtrate, and recycling said precipitated zinc sulphate to the electrolysis step in the next cycle by dissolving it in the aqueous leach liquor fed to the electrolysis step. Preferably the starting material (zinc sulphate) is obtained by a controlled oxidation (sulphating) roast of zinc sulphide ore or zinc containing residues obtained in zinc manufacturing processes.

3,753,693

CHROMIUM-NICKEL-MANGANESE-NITROGEN AUSTENITIC STAINLESS STEEL

Ronald H. Espy, Randallstown, Md., assignor to Armco Steel Corporation, Middletown, Ohio

Filed May 6, 1971, Ser. No. 141,005

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 A **9 Claims**

An austenitic stainless steel having good austenite stability, a very low work hardening rate and excellent weld ability by fillerless fusion welding techniques comprising from 17 to 19 percent chromium, from 4 to 10 percent nickel, from 11 to 13 percent manganese, from 0.01 to 0.16 percent nitrogen, 0.06 maximum carbon, up to 1 percent silicon, up to 2 percent molybdenum, up to 1.5 percent copper, and remainder iron except for incidental impurities. The 0.2 percent yield strength of the steel in the annealed condition ranges from about 172.5 to 345 MN/m² (25 to 50 ksi). The alloys have particular utility in applications involving cold heading.

3,753,694

PRODUCTION OF COMPOSITE METALLIC ARTICLES

Frank A. Badia, Ringwood, N.J.; Donald F. MacDonald, Warwick, and Frank J. Ansuini, Suffern, both of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed July 6, 1970, Ser. No. 52,713
Int. Cl. C22c 1/10
U.S. Cl. 75—135 25 Claims

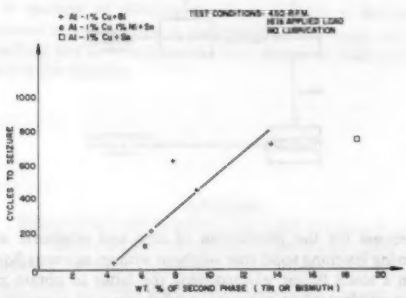
Composites formed of incompatible constituents, i.e., constituents which are mutually insoluble, are produced by introducing at least one such constituent in coated form into a molten bath of the other, the bath being subjected to the influence of a vortex.

3,753,695

BEARING MATERIALS

Kenneth Lloyd, London, England, assignor to The Glacier Metal Company Limited, Alperton, England

Filed Feb. 11, 1971, Ser. No. 114,660
Claims priority, application Great Britain, Feb. 13, 1970, 7,058/70
Int. Cl. C22c 21/02
U.S. Cl. 75—143 5 Claims



The invention is a bearing material of which a major constituent is aluminum characterised by between 1 percent and 16 percent (preferably between 3 percent and 7 percent or between 7 percent and 10 percent or between 10 percent and 16 percent of bismuth by weight, and optionally including 0 – 3 percent copper, 0 – 3 percent nickel, 0 – 3 percent manganese, 0 – 11 percent silicon.

3,753,696

HIGH STRENGTH COPPER ALLOY HAVING AN EXCELLENT FORMABILITY AND PROCESS FOR PRODUCING THE SAME

Motonobu Shibata, Inazawa, and Yoshitsugu Mishima, Tokyo, both of Japan, assignors to NGK Insulators, Ltd., Aichi, Japan

Filed Jan. 22, 1971, Ser. No. 108,994
Claims priority, application Japan, Sept. 2, 1970, 45/76893
Int. Cl. C22c 9/04; C22f 1/08
U.S. Cl. 75—157.5 1 Claim

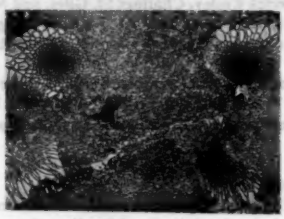
A high strength copper alloy having excellent formability consisting of from 0.2 to 0.5 percent by weight of beryllium, from 2.0 to 12.0 percent by weight of aluminum, from 0.5 to 10.0 percent by weight of zinc and the remainder of copper is disclosed. The copper alloy disclosed can be produced by melting a copper-beryllium master alloy, aluminum, zinc and copper so as to provide the above specified composition, casting the alloy into an ingot, hot working the ingot at about 800°C, cold working the ingot into the specified dimension, and then subjecting it to solution annealing at a temperature of from 800°C to 950°C followed by hardening either by cold working or ageing.

3,753,697

TUNGSTEN FREE ALLOY

John Hockin; Carl H. Lund, both of Arlington Heights, and Wilbert P. Danesi, Deerfield, all of Ill., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,338
Int. Cl. C22c 19/00
U.S. Cl. 75—171 4 Claims



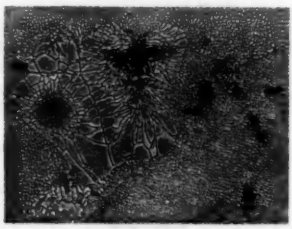
High temperature nickel-base alloy containing a base of nickel and about 5.5 percent aluminum, about 0.02 percent boron, about 0.18 percent carbon, about 15 percent cobalt, about 10 percent chromium, about 1.5 percent hafnium, about 3 percent molybdenum, about 4.0 percent titanium, about 1 percent vanadium, about 0.1 percent zirconium.

3,753,698

NICKEL-BASE ALLOY

Carl H. Lund, Arlington Heights, Ill., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,846
Int. Cl. C22c 19/00
U.S. Cl. 75—171 3 Claims



A cast nickel-base alloy containing about 5.75 percent aluminum, about 0.015 percent boron, about 0.11 percent carbon, about 10 percent cobalt, about 8 percent chromium, about 1.5 percent hafnium, about 2 percent molybdenum, about 4 percent tantalum, about 1 percent titanium, about 8 percent tungsten and about 0.08 percent zirconium.

3,753,699

REFRACTORY METAL ALLOYS FOR USE IN OXIDATION ENVIRONMENTS

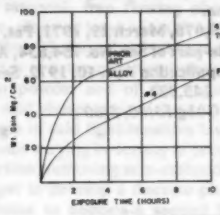
Wallace T. Anderson, Jr., Huntington Beach, and Ralph A. Mendelson, Westminster, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 30, 1971, Ser. No. 214,351
Int. Cl. C22c 27/00
U.S. Cl. 75—174 2 Claims

A refractory metal alloy comprising principally columbium and titanium with lesser amounts of hafnium, vanadium, tungsten, aluminum, and molybdenum provides excellent resistance to air oxidation at high temperature.

The preferred composition range is as follows:

Columbium 48–54 percent; Titanium 23–25 percent; Hafnium 9.75–17.5 percent; Vanadium 2–8.75 percent; Tungsten 2.25–2.75 percent; Aluminum 1.8 percent; and Molybdenum 0.7 percent; all parts by weight.



3,753,700

HEAT RECOVERABLE ALLOY

John D. Harrison; Jei Y. Chol, both of Palo Alto, and Peter R. Marchant, San Francisco, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed July 2, 1970, Ser. No. 52,112
Int. Cl. C22c *15/00*
U.S. Cl. 75—175.5 **2 Claims**

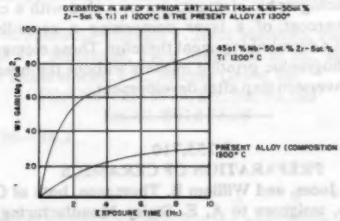
An alloy capable of having the property of heat recoverability imparted thereto comprising 49.1 to 50.2 atomic percent of titanium, 2.1 to 4.7 atomic percent of iron and the remainder nickel.

3,753,701

REFRACTORY METAL ALLOYS FOR USE IN OXIDATION ENVIRONMENTS

Wallace T. Anderson, Jr., Huntington Beach, and Ralph A. Mendelson, Westminster, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 30, 1971, Ser. No. 214,352
Int. Cl. C22c *15/00*
U.S. Cl. 75—175.5 **2 Claims**



A refractory metal alloy comprising principally columbium and titanium, with lesser amounts of beryllium, chromium, silicon and yttrium provides excellent resistance to air oxidation at high temperature.

The broad composition range is as follows:

Columbium 32.5–46 percent; Titanium 50.5–57.5 percent; Beryllium 0–8 percent; Chromium 2.15–2.6 percent; Silicon 0–8 percent; and Yttrium 0–0.1 percent; all parts by weight.

3,753,702

PARTICULATE ZINC ALLOYS

Schrade F. Radtke, New Canaan, Conn., and John A. Lund, Vancouver, British Columbia, Canada, assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

Continuation of Ser. No. 651,676, July 7, 1967, abandoned. This application Mar. 9, 1971, Ser. No. 122,509
Int. Cl. C22c *17/00*
U.S. Cl. 75—178 R **4 Claims**

Zinc base particulate alloys exhibiting both high tensile strength and high ductility, and containing titanium uniformly dispersed throughout the zinc matrix, with the zinc alloy having the form of small particles prepared by a melt-fragmentation process, such as atomisation or shotting. The zinc alloy may also contain small amounts of other metals, such as chromium, nickel and aluminum.

3,753,703

SINTERED MOLYBDENUM BORON ALLOY

Friedrich Benesovsky, Reutte, Tirol, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

Filed Oct. 13, 1969, Ser. No. 865,682
Claims priority, application Austria, Oct. 11, 1968, A-9933
Int. Cl. B22f *1/00*; C22c *1/00*; C22b *49/00*
U.S. Cl. 75—200 **7 Claims**

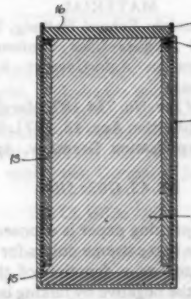
This application relates to a sintered molybdenum boron alloy optionally containing other additives including tungsten, zirconium and hafnium with the boron content of the alloy being less than about 0.2 weight per cent and preferably between 0.005 and 0.01 weight per cent.

3,753,704

PRODUCTION OF CLAD METAL ARTICLES

Charles Ernest Manilla; Harold Hilton Honaker, and David Olen Gothard, all of Huntington, W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 630,987, April 14, 1967, Pat. No. 3,652,235. This application Aug. 25, 1970, Ser. No. 66,788
Int. Cl. B22f *7/04, 7/02*
U.S. Cl. 75—208 R **4 Claims**



Production of clad stock, e.g., bar, tubing, pipe, etc., wherein the cladding is prepared by pressing metal powders to desired form, the green form is sintered and coextruded hot with the core or basis material. Highly corrosion resistant

cladding metals can be applied to basis materials of iron-group metals including common structural materials and high recovery of the cladding material is obtained. Externally or internally clad tubes have a cladding of 50 percent nickel-50 percent chromium alloy on substrates of steels, nickel alloys, including nickel-chromium alloys, etc., can readily be produced for use in applications requiring resistance to severe corrosive conditions at various temperatures.

3,753,705

AGGLOMERATION IMAGING PROCESS USING HARDENABLE MATERIAL

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1969, Ser. No. 862,907
Int. Cl. G03g *5/00*; G03c *5/16, 5/24*
U.S. Cl. 96—1 R **35 Claims**

An imaging system comprising providing an imaging member comprising an agglomerable layer in contact with an imagewise hardenable-softenable layer and imagewise hardening said member. An image is developed by imagewise softening said member to cause relative transparentizing in the imagewise softened areas due to an agglomeration of the agglomerable layer in the imagewise softened portions of said member.

3,753,706

PHOTOELECTROSOLOGRAPHIC IMAGING METHOD WHEREIN AN ABSORBENT MATERIAL IS USED

Joseph G. Sankus, Jr., Fairport, N.Y., and Nicholas L. Petruzzella, Columbus, Ohio, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1969, Ser. No. 872,282
Int. Cl. G03g *13/10, 13/22*
U.S. Cl. 96—1 R **78 Claims**

A migration imaging system having a migration imaging member comprising a softenable layer, migration material and an absorbent blotter member, which imaging member may be imaged by forming a latent image on said member, softening the softenable layer and removing residual materials by removing the absorbent blotter member.

3,753,707

METHOD OF CONTROLLING EXPOSURE DURING PHOTOGRAPHIC PRINTING OF VARIABLE CONTRAST MATERIAL

Theodor Burger, Munich; Erhard Hellmig, Leverkusen, both of Germany, and Jacques Leon Vanheerentals, Schoten, Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 714,187, March 19, 1968, abandoned. This application Aug. 13, 1971, Ser. No. 171,764
Claims priority, application Germany, Apr. 26, 1967, A 55553
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 **8 Claims**

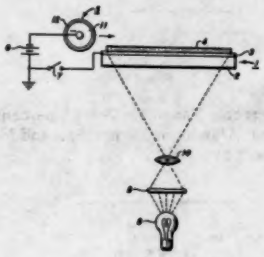
Variable contrast printing paper is exposed to light passing through a negative in two extreme colors for a total exposure time which is selected as a function of the maximum or minimum density of the negative by talking into consideration the sensitivity of printing paper. The ratio of exposures to light in the two extreme colors within the total exposure time is selected as a function of the density range, maximum density or minimum density of the negative by way of a calibration curve which is determined for the particular charge of printing material.

3,753,708

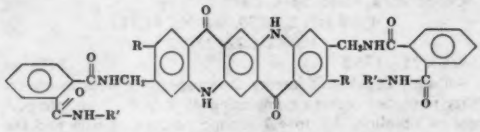
PHOTOELECTROPHORETIC IMAGING PROCESS EMPLOYING QUINACRIDONE PIGMENTS

Lester Weinberger, Mt. View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 129,078, March 29, 1971, Pat. No. 3,705,901, Continuation-in-part of Ser. No. 754,634, Aug. 22, 1968, abandoned. This application Apr. 10, 1972, Ser. No. 243,521
Int. Cl. G03g *13/00, 5/00*
U.S. Cl. 96—1 PC **8 Claims**



A novel composition having the formula:



wherein R = CH_3, C_2H_5, OCH_3, OC_2H_5 or a halogen and wherein R' = an aromatic, heterocyclic, alicyclic or aliphatic group is disclosed. Methods of preparing said composition and of using said composition in electrophoretic imaging processes are also disclosed.

3,753,709

CROSSLINKED RESIN OVERCOATED ELECTROPHOTOGRAPHIC ELEMENTS USEFUL IN LITHOGRAPHY

William J. Staudenmayer, Pittsford; William E. Yoerger, and Donald A. Smith, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 25, 1971, Ser. No. 119,050
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.5 **18 Claims**

Electrophotographic elements are provided with a conversion-free overcoat of a layer comprising a cross-linkable polymer and a crosslinking agent therefor. These elements are useful as lithographic printing masters without the need for a separate conversion step after development.

3,753,710

PREPARATION OF CERAMICS

Rexford W. Jones, and William B. Thompson, both of Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. Nos. 796,897, Feb. 5, 1969, abandoned, and Ser. No. 849,493, Aug. 12, 1969, abandoned, and Ser. No. 849,492, Aug. 12, 1969, abandoned, and Ser. No. 877,430, Nov. 17, 1969, abandoned, and Ser. No. 32,407, April 27, 1970, abandoned. This application June 28, 1971, Ser. No. 157,723
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **19 Claims**

Method for forming ceramics and more particularly for fabricating screens for colored television tubes comprising

coating a cathode ray tube faceplate with a solid, light-sensitive organic layer capable of developing a R_d of 0.2 to 2.2, preferably a R_{dp} of 0.4 to 2.0; exposing said light-sensitive organic layer to actinic radiation in image-receiving manner to establish a potential R_d of 0.2 to 2.2; applying to said layer of organic material, free flowing phosphor particles having a diameter, along at least one axis of at least about 0.3 micron but less than 25 times the thickness of said organic layer; while the layer is at a temperature below the melting points of the phosphor powder and of the organic layer, physically embedding said phosphor particles as a monolayer in a stratum at the surface of said light-sensitive layer to yield an image having portions varying in density in proportion to the exposure of each portion; removing non-embedded particles from said organic layer to develop a discrete phosphor pattern, repeating said process to deposit a second phosphor and firing said faceplate to remove all of the organic material on the surface of the faceplate and fuse the phosphors to said faceplate.

Ceramics may be processed in the same manner and in those cases where the ceramic pigment comprises a conductive metal, the technique can be employed to prepare ceramic circuit boards.

3,753,711

METHOD FOR PRODUCING PHOSPHOR SCREEN

Yoshichika Kobayashi, Ibaragi, and Kouzi Yakeno, Katano, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Dec. 13, 1971, Ser. No. 207,180

Claims priority, application Japan, Dec. 18, 1970, 45/116099

Int. Cl. G03c *5/00*

U.S. Cl. 96—36.1 **3 Claims**

A phosphor screen for color picture tube is usually produced by the first step which comprises suspending a blue emission phosphor in an aqueous solution of photo-setting photosensitive material comprising polyvinyl alcohol and ammonium dichromate, applying thus obtained suspension to inner surface of face panel to form a photosensitive film, exposing said film through apertures of shadow mask and developing the exposed film to form dotty phosphor film and the second and the third steps of forming the dotty phosphor films of green and red emissions in this order by substantially the same procedure as that of the first step. According to the present invention, the dotty phosphor films formed at said first and second steps are treated with chromic acid solution to harden said films, whereby color mixing, namely, so-called color fogging caused by a phosphor of other color emission used at the subsequent step is reduced and color purity of emission from phosphor screen face is improved.

3,753,712

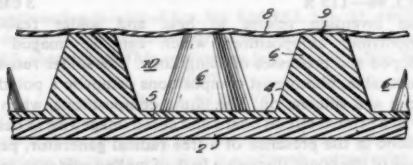
METHOD OF MAKING DIFFUSION DEVICES HAVING A MEMBRANE SUPPORT OF PHOTOINSOLUBILIZED PLASTIC

Howard A. Janneck, Chicago; F. Jesus Martinez, Palatine, and George W. Schnitzius, Park Ridge, all of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Nov. 23, 1970, Ser. No. 92,102

Int. Cl. B01d *31/00*

U.S. Cl. 96—38.2 **8 Claims**



Mass transfer diffusion devices, such as artificial kidneys and membrane oxygenators, are provided having a membrane support which comprises a supporting layer made from photoinsolubilized plastic. The supporting layer defines a plurality of projections of uniform height to support the membrane and to define fluid flow channels of uniform depth between the projections. The membrane support is fabricated by overlaying a photoinsolubilizable plastic layer with a master transparency having transparent and opaque areas disposed in a predetermined arrangement, passing light or other radiation through the transparency to insolubilize appropriate portions of the plastic layer, and then washing away the remaining soluble portions of the plastic layer.

3,753,713

PROCESS FOR THE PRODUCTION OF A TOPOGRAPHICAL MAP HAVING A RELIEF CONTOUR EFFECT

Alfred M. Fraser, Silver Spring, Md.

Filed Mar. 29, 1972, Ser. No. 239,272

Int. Cl. G03c *5/04*

U.S. Cl. 96—41 **3 Claims**

A photo-mechanical process for the production of a topographical map having a relief contour effect wherein a positive print is obtained through a shifted overlay including a positive transparency form of the map, a positive mask transparency of selected contour lines of the map, and a negative transparency form of the map; thereafter obtaining a negative print with the use of the negative form, the mask and the positive form individually; and finally preparing a final print through the negative and positive prints.

3,753,714

IMAGE FORMATION BY RADIATION AND INTENSIFICATION

Mitsunori Sugiyama; Ikuo Fujimura; Masao Takano, and Minoru Sonoda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 23, 1970, Ser. No. 91,750

Claims priority, application Japan, Nov. 21, 1969, 44/93424

Int. Cl. G03c *1/92*

U.S. Cl. 96—45.1 **17 Claims**

A method for forming an image by radiation, which comprises:

a. closely contacting a photographic light-sensitive material having a silver halide emulsion layer on only one side of a support thereof with a fluorescent intensifying screen, and

b. subsequently subjecting the light-sensitive material to the steps of:

c. radiation

d. development

e. fixation, and

f. intensification,

said resulting combination characterized in that the emulsion surface and fluorescent surface are facing each other.

3,753,715

PHOTOPOLYMERIZABLE COPYING MATERIAL

Kurt-Walter Klupfel, Wiesbaden-Sonnenberg, and Ursula Elter, Wiesbaden-Biebrich, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed July 19, 1971, Ser. No. 163,999

Claims priority, application Germany, July 23, 1970, P 20 36 585.6

Int. Cl. G03c *1/68*

U.S. Cl. 96—86 P **9 Claims**

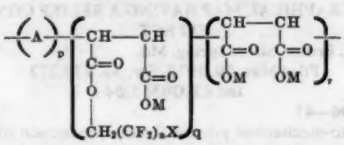
This invention relates to a photopolymerizable copying material comprising a support, a photopolymerizable copying layer thereon containing a photoinitiator and a low molecular weight vinyl or vinylidene compound polymerizable by exposure to light, and a top layer only slightly permeable to oxygen and transparent to actinic light, said top layer containing, as an oxygen inhibitor, at least one low molecular weight film-forming compound soluble in water at 20° C.

3,753,716
METHOD FOR ANTISTATIC TREATMENT OF PLASTIC FILMS

Masao Ishihara; Koichi Horigome, both of Tokyo; Masaru Kanbe, Yamanashi-ken; Masahide Tamura, and Motoo Kogure, both of Tokyo, all of Japan, assignors to Konishiroki Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1972, Ser. No. 223,698
Int. Cl. G03c *1/82*
U.S. Cl. 96—87 A **2 Claims**

A method for antistatic treatment of plastic films, characterized by treating the films with a solution containing a copolymer having the general formula,



wherein A is a vinyl monomer; M is a hydrogen atom, an alkali metal or a cation of ammonium or the like; X is a hydrogen or fluorine atom; n is an integer of 1 to 8; and p, q and r are mole percentages of the copolymer components, where p is 40 to 60, $q+r$ is $100-p$ mole%, and $[q/(q+r)]\times 100$ is 10 to 100.

3,753,717
PHOTOGRAPHIC MATERIAL

Alexei Alexeevich Titov; Jury Vasilievich Smirnov; Jury Shabsaevich Mashkovsky; Ernest Dmitrievich Tamitsky; Vladimir Nikitovich Chursin; Ljudmila Leonidovna Antonova, and Tamara Stepanovna Selitskaya, all of Moscow, U.S.S.R.

Filed Feb. 3, 1972, Ser. No. 223,338
Int. Cl. G03c *1/00*
U.S. Cl. 96—88 **3 Claims**

A photographic material, comprising a support with a mixture applied thereto, said mixture comprising an organic dye such as methylene blue or thionine blue, a water-soluble salt of silver, gold, platinum or palladium and disodium salt or ethylenediaminetetraacetic acid or triethanolamine. The content of said components in said mixture is the following (g per m^2 of the support surface area):

organic dye	$5\cdot10^{-4}$–$5\cdot10^{-2}$
water-soluble salt of silver, gold, platinum or palladium	$1\cdot10^{-4}$–$5\cdot10^{-2}$
disodium salt of ethylenediamine tetraacetic acid or triethanolamine	2.5–20

Said mixture may also comprise gelatine or polyvinyl alcohol in an amount of 2–50 g per m^2 of the support surface area.

The photographic material according to the invention exhibits light sensitivity both in ultraviolet and visible regions of the spectrum. This permits to use this photographic material to produce negative and positive images when taking photographs and reproducing coloured objects.

3,753,718
PHOTOSENSITIVE MEDIUM COMPRISING A CYCLIC ACETAL OF FURFURAL, A LOWER HALOALKANE, AND SILICA

William F. Lonczak, Chicopee, Mass., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Feb. 4, 1972, Ser. No. 223,775
Int. Cl. G03c *1/00*
U.S. Cl. 96—88 **9 Claims**

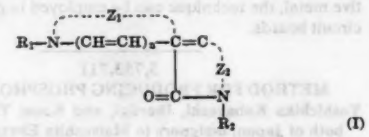
Improved, negative-working, copying materials are prepared by coating a paper or film substrate with an amine-free formulation comprising a cyclic acetal of furfural, a photosensitive lower haloalkane, a binder resin and silica. Images are formed on the copying materials by exposure to ultraviolet light and fixed by heating.

3,753,719
LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

Kenro Sakamoto; Isamu Fushiki, both of Tokyo, and Eiichi Sakamoto, Hanno, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

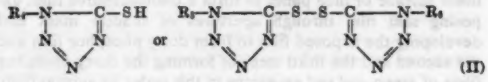
Filed Mar. 19, 1971, Ser. No. 126,360
Claims priority, application Japan, Mar. 20, 1970, 45/23143
Int. Cl. G03c *1/40*, *1/08*
U.S. Cl. 96—100 **4 Claims**

A new combination of a merocyanine type compound of the formula (I)



(I)

wherein R_1 is a lower alkyl group; R_2 is a lower alkyl, lower alkenyl or aryl group; Z_1 represents a non-metallic atom group necessary to complete a 5- or 6-memberd heterocyclic ring nucleus; Z_2 represents a non-metallic atom group necessary to complete a 5-membered ring; and n is 0 or 1, in combination with at least one compound of the formula



(II)

wherein R_4, R_5 and R_6 are individually a hydrogen atom, or an alkyl, alkenyl, aryl or aralkyl group, and R_5 and R_6 may be the same or different, is found to be useful in a light-sensitive silver halide color photographic material to improve graininess of the resulting color image when said photographic material is subjected to imagewise exposure to light and color development.

3,753,720
SOLDER RESISTANT PHOTOPOLYMER COMPOSITIONS

Harold A. Kloczewski, Pasadena; Joseph D. Moyer, Silver Spring; David E. Kramm, Laurel, and William Ross Schaeffer, Baltimore, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,824
Int. Cl. G03c *1/70*
U.S. Cl. 96—115 R **3 Claims**

This invention relates to heat and solder resistant, photopolymer compositions which can be imaged and developed and processes of using same. The solder resistant, photocurable, photoresist compositions comprise a polythiol, polyene and silicone oil. The liquid compositions, when applied to a printed circuit board and cured imagewise as desired to a solid in the presence of a free radical generator, permit passage of the board through a bath of molten solder to secure electrical components thereto. When the free radical generator is actinic radiation, e.g., UV light, a curing rate accelerator, e.g., benzophenone is usually added to the composition.

3,753,721
PHOTOGRAPHIC MATERIALS

Allan G. Millikan, Webster, and Mary Jane W. Brizee, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

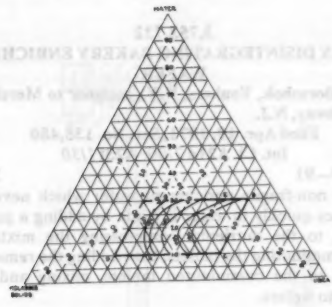
Filed Aug. 13, 1970, Ser. No. 63,606
Int. Cl. G03c 1/28
U.S. Cl. 96—130 **20 Claims**

Light-sensitive silver halide grains having an average size of up to 0.2 micron are sensitized with a noble metal sensitizer at a concentration of at least 50 mg. noble metal per mole of silver, and a sulfur sensitizer at a weight ratio of sulfur to noble metal of about 1:15 to 1:75; said silver halide grains being spectrally sensitized with a photographic spectral sensitizing methine dye.

3,753,722
ANIMAL FEED SUPPLEMENT

Harlan L. Beucler, Wayzata, Minn., assignor to Cargill, Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 816,195, April 15, 1969, abandoned. This application Aug. 27, 1971, Ser. No. 175,493
Int. Cl. A23k 1/02, 1/22
U.S. Cl. 99—2 ND **18 Claims**



A urea-mollases animal feed supplement containing less than 30 weight percent water and at least 25 weight percent urea solids.

3,753,723
ANIMAL FEED AND METHOD OF MAKING SAME

Hugh E. Henderson, 1664 Algama, Okemos, Mich.; John Talmage Huber, 1086 Haslett Rd., Haslett, Mich., and Douglas Barrie Purser, 17 Dunkley Ave., Applecross, Australia

Continuation-in-part of Ser. No. 846,552, July 31, 1969, abandoned, Continuation-in-part of Ser. No. 826,620, May 21, 1969, abandoned. This application July 31, 1970, Ser. No. 60,081
Int. Cl. A23k 1/00
U.S. Cl. 99—9 **15 Claims**

A method for producing feed for ruminant animals wherein an aqueous ammonia solution is uniformly mixed with fermentable plant material. The mixture is fermented under anaerobic conditions, converting the ammonia to consumable nitrogen compounds. The ammonia may be added in admixture with molasses and mineral salts.

3,753,724
LIQUEUR PREPARATION FROM MILK

Harry Silby, deceased, late of Miami, Fla. (by Mayme Silby, executrix), assignor to Wire Sales Company, Chicago, Ill.

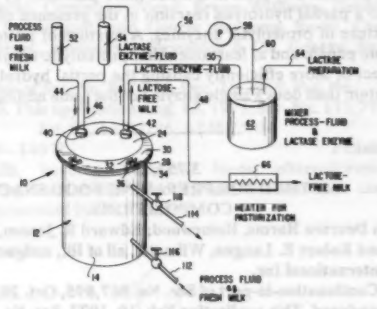
Continuation-in-part of Ser. No. 32,438, April 27, 1970, abandoned. This application May 5, 1971, Ser. No. 140,370
Int. Cl. C12g 3/04
U.S. Cl. 99—30 **12 Claims**

A liqueur is prepared by fermenting a mixture of uncooked milk, alcohol, sugar, lemon and vanilla. No distillation is involved and all pure flavorings and colorings are utilized. After fermentation and filtration of solids, additional uncooked milk is added to the filtrate for a second fermentation step. The solids recovered after the filtration contain fat from the milk and may be used for other purposes.

3,753,725
METHOD FOR ENZYMATIC CONVERSION OF LACTOSE TO GLUCOSE AND GALACTOSE IN LACTOSE CONTAINING FLUIDS

Roger J. Williams, and Marvin Kendall Young, both of Austin, Tex.

Filed Mar. 11, 1971, Ser. No. 123,166
Int. Cl. A23c 9/14
U.S. Cl. 99—54 **9 Claims**



A process-fluid containing lactose, such as milk, flows through a first chamber that is juxtaposed to a second chamber and separated therefrom by a semi-permeable membrane. An enzyme-fluid, which is a fluid similar to the process-fluid but containing lactose, flows through the second chamber to convert the lactose in the fluids in the chambers to glucose and galactose at a rate dependent upon the temperature and concentration of the enzyme. The membrane allows lactose, glucose and galactose to pass between the chambers but prevents passage of the lactose from the second chamber due to its large molecular weight. The levels of glucose and galactose are controlled by constantly removing such substances with a fluid, similar to the process-fluid, that flows at a rapid rate in a third chamber surrounding the other chambers and separated therefrom by a semi-permeable membrane.

3,753,726
REDUCING BITTERNESS PERCEPTION OF COFFEE BEVERAGES AND PRODUCTS

William P. Clinton, Monsey; Joel R. Kaplan, Ossining, and Philip J. Capasso, Goshen, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed June 9, 1971, Ser. No. 151,534
Int. Cl. A23f 1/04
U.S. Cl. 99—65 **6 Claims**

Coffee beverage products are treated to reduce the level of bitterness perceived by the beverage consumer by producing coffee products which will yield beverages containing an effective amount of a food acid such as citric acid. Alternatively effective amounts of the food acid may be added to the coffee beverage itself.

3,753,727

METHOD OF RESTRUCTURING RICE

John C. Whelan, Woodland, Calif., assignor to Adams & Whelan, Woodland, Calif.

Filed Dec. 28, 1970, Ser. No. 102,077
Int. Cl. A23l *1/10, 1/18*
U.S. Cl. 99—81 9 Claims

Rice is restructured by quickly heating a mass of natural rice at substantially atmospheric pressure to a temperature of about 300° F and then passing the rice mass while so heated between rotating rolls, preferably metal, and yieldably pressed together, so that the heated rice is mechanically squeezed and then is discharged, preferably by gravity, whereupon the rice grains enlarge in all dimensions.

3,753,728

PROCESS FOR PRODUCTION OF SOY-CONTAINING BREAKFAST CEREALS

William T. Bedenk, Springfield Twp., Hamilton County, and David E. O'Connor, Cincinnati, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Oct. 5, 1970, Ser. No. 78,274
Int. Cl. A23l *1/18*
U.S. Cl. 99—81 16 Claims

Process for making ready-to-eat breakfast cereal containing soy protein. Soy protein is made more palatable by subjecting it to a partial hydrolysis reaction in the presence of a specific mixture of proteolytic enzymes. A mixture of proteolytic enzyme papain and at least one other proteolytic enzyme has the effect of more efficiently causing the partial hydrolysis of soy protein than does a single enzyme at the same addition level.

3,753,729

METHOD FOR PREPARING FOOD SNACK COMPOSITIONS

Van Deursen Harms, Homewood; Edward R. Jensen, Hinsdale, and Robert E. Langan, Wilmette, all of Ill., assignors to CPC International Inc.

Continuation-in-part of Ser. No. 867,895, Oct. 20, 1969, abandoned. This application Feb. 10, 1972, Ser. No. 225,289
Int. Cl. A23l *1/18, 1/10*
U.S. Cl. 99—82 9 Claims

A process for preparing a food snack which uses a particulate starch material having a specified abrasion rating in combination with a small proportion of an oleaginous material and water. This combination is extruded under pressure and at elevated temperature to a puffed, ready-to-eat product.

3,753,730

PROCESS FOR FLAVORING RICE, COMPOSITIONS USED THEREWITH, AND PRODUCTS OBTAINED THEREBY

Carmine Donnarumma, Washington Twsp., Bergen County; Harvey Farber, Forest Hills, both of N.J.; Charles H. Grimm, Woodmere, N.Y.; Simpey Kuramoto, Ridgewood, N.J.; Don Marmo, Farmingdale, and Herbert S. Stein, Rosedale, both of N.Y.

Filed Oct. 16, 1970, Ser. No. 81,623
Int. Cl. A23l *1/10, 1/26*
U.S. Cl. 99—83 14 Claims

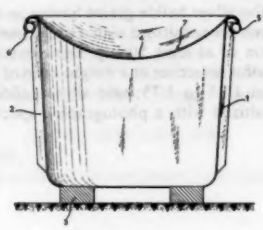
Processes for altering the flavors of particulate grain products which comprise applying a composition comprising a flavoring agent, an edible, cold water-insoluble film-former, and a vehicle to a particulate grain product; drying the distributed composition to form a flavor-containing film on the grain product; and optionally distributing the coated flavored grain through a larger mass of uncoated grain particles; as well as products obtained thereby. The flavor of rice, such as "-miracle rice," is altered by applying a solution containing a carbonyl flavoring material as the flavoring agent.

3,753,731

PROCESS AND APPARATUS FOR FERMENTATION

Charles Christ, 65 rue de Paris, Connerre, France

Filed Mar. 16, 1971, Ser. No. 124,711
Int. Cl. A23l *1/00;* A23b *7/00*
U.S. Cl. 99—103 1 Claim



The present invention concerns a process and apparatus for fermentation in a vacuum. The apparatus is useful in the fermentation of a mass, specifically, the fermentation of vegetables such as cabbage, the apparatus consisting of an air-tight container, preferably suitable for storage on a pallet, and equipped with means of creating a vacuum therein.

3,753,732

RAPIDLY DISINTEGRATING BAKERY ENRICHMENT WAFER

Melvin J. Boroshok, Yonkers, N.Y., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 19, 1971, Ser. No. 135,480
Int. Cl. A21d *2/00;* A23l *1/30*
U.S. Cl. 99—91 3 Claims

A hard, non-fragile enrichment wafer which nevertheless disintegrates quickly in water is made by adding a portion of the starch to the nutrients, compressing the mixture into tablets, comminuting the tablets, then adding the remainder of the starch to the comminuted tablets, mixing and recompressing into wafers.

3,753,733

METHOD OF PREPARING A COMPOSITE PIE

Carl F. Bell, P.O. Box 145, East Aurora, N.Y.

Filed June 21, 1971, Ser. No. 155,124
Int. Cl. A21d *13/08*
U.S. Cl. 99—92 2 Claims

A method of making a composite pie comprising a plurality of separate and differently flavored layers of filling enveloped within a shell of crust. A divider of crust is interposed between adjacent layers of fillings for separating and isolating such layers from each other.

3,753,734

SHELF STABLE PANCAKE AND WAFFLE PRODUCTS

Milton Kaplow, White Plains, and Robert E. Klose, Bronx, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 813,321, April 3, 1969, abandoned. This application Nov. 4, 1971, Ser. No. 195,870
Int. Cl. A21d *13/08;* A23l *3/34;* A21d *15/00*
U.S. Cl. 99—92 4 Claims

Shelf-stable pancake batters and pancakes which may be stored for long periods of time without refrigeration in non-hermetic packages are prepared by including in the batter water soluble solids at least equal to the moisture in the batter with edible polyhydric alcohols constituting the principal source of the water soluble solids.

3,753,735
METHOD OF MAKING AN EXPANDED CRISP SNACK FOOD PRODUCT

Dirk R. D'Arnaud Gerkens, Breda, Netherlands, assignor to Nibb-It Products Association Ltd., Zurich, Switzerland

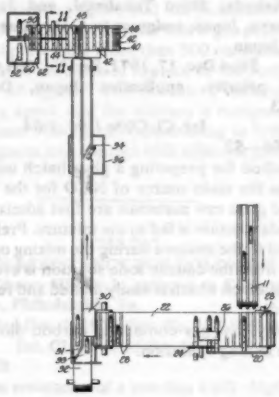
Filed Aug. 10, 1970, Ser. No. 62,645
Int. Cl. A23l *1/12*
U.S. Cl. 99—100 P 3 Claims

Describes a method of making a snack food product from potato material having a reducing sugar content of above three percent on the dry basis, mixed with dried gelatinized starch to produce a reducing sugar content in said mixture of between one and two percent by weight, which mixture is seasoned with salt and other flavoring materials, and made into an extrudable mass by the addition of water, the mass extruded, the extruded material is dried and fried into a crispy expanded snack product.

3,753,736
METHOD OF PACKING ASPARAGUS FOR THE GROWING FIELD

George R. Barker, Banning, Calif.

Division of Ser. No. 770,722, Oct. 25, 1968, Pat. No. 3,548,577. This application Aug. 24, 1970, Ser. No. 66,238
Int. Cl. A23l *1/00*
U.S. Cl. 99—100 R 1 Claim



A method of harvesting asparagus utilizing an asparagus harvester which engages the growing asparagus in the field, saws the asparagus below the ground, releases the asparagus butt first onto a grooved belt, then conveys the asparagus up an incline where the asparagus is conveyed butt first onto a second grooved conveyor belt and against a stop member; this conveyor belt travels perpendicular to the first belt. After the asparagus comes to a stop, the butt portions which were growing underground are sawed off by a second saw, and the remainder of the spears are allowed to travel along this belt until they reach a sorting member at which they are sorted into two predetermined lengths; the short spears are passed directly from this member into one box. The longer spears are oriented tip first and are carried up a conveyor belt to another grooved conveyor running perpendicular and horizontal to the last conveyor. Here the longer spears are sawed to a predetermined maximum tip length and routed to a container. The remaining cut made here are "center cuts," which are likewise routed to a container.

3,753,737
OMELET PREPARING AND PROCESS

S. Duane Latham; Robert D. Seeley, both of Crestwood; Henry F. Reitz, and Ronald F. Reitz, both of St. Louis, all of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Oct. 12, 1970, Ser. No. 79,922
Int. Cl. A23l *1/32*
U.S. Cl. 99—113 5 Claims

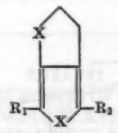
The invention comprises a process for producing a folded egg omelet using an egg batter mixture. The mixture is deposited into a preheated omelet cooking pan which has hinged sides which are folded upwardly together after partial cooking of the omelet. The omelet batter is deposited into the preheated foldable pan and is heated from the top and from the bottom. After direct heating is terminated, flavoring ingredients or inclusions are deposited onto the partially cooked omelet and CO_2 and steam are allowed to escape before the pan is closed. The omelet while folded continues to cook from the residual heat in the omelet cooking pan.

3,753,738
OXA-THIA-BICYCLO [3.3.0] OCTADIENES AS FLAVORING AGENTS

Fritz Gautschi, Commugny/Vaud; Bruno Willhalm, Geneva, both of Switzerland, and George Hermann Buchi, Cambridge, Mass., assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 887,776, Dec. 23, 1969, Pat. No. 3,652,593. This application Aug. 13, 1971, Ser. No. 171,778
Int. Cl. A23l *1/26*; A24b *15/04*
U.S. Cl. 99—140 R 2 Claims

Foodstuffs, beverages, animal feeds, pharmaceutical preparations, and tobacco products are flavored with compounds represented by the formula



wherein one of the symbols X represents oxygen and the other sulphur and R_1 and R_2 are hydrogen or methyl radicals. The flavoring compounds or their solutions can be used either alone or in combination with other flavor ingredients.

3,753,739
LOW CALORIE DRY SWEETENER COMPOSITION

John A. Cella, Lake Forest, and William H. Schmitt, Elmhurst, both of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Filed Nov. 5, 1970, Ser. No. 87,303
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 A 8 Claims

Pulverulent free-flowing water-soluble low calorie sweetener compositions having the general appearance of sucrose are produced by preparing a strong aqueous solution or slurry of an aspartyl-phenylalanine methyl ester sweetener at a relatively low temperature, admixing therewith a heated aqueous starch hydrolysate having a D.E. of zero to 20, and promptly thereafter, feeding the mixture to the preheater of a spray drier and thereupon spray drying said mixture to provide an expanded dry pulverulent composition containing a low moisture content.

3,753,740

EASILY PEELABLE SAUSAGE CASING

Albin F. Turbak, and Henry J. Rose, both of Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Dec. 23, 1969, Ser. No. 887,722
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 8 Claims

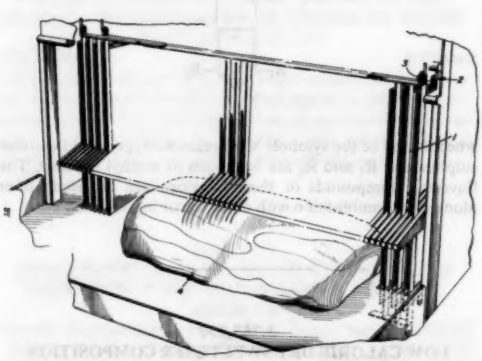
Sausages, such as frankfurters and bolognas, formed in synthetic casings are more easily peeled by soaking the casings or coating the inner surface, either at the time of manufacture or after stuffing with sausage emulsion, with water-soluble or water-dispersible high molecular weight film forming or substantive carbonyl or sulfonyl containing derivatives of a fluorocarbon. The soluble fluorocarbon derivative is preferably a fluoro or perfluoro ester, amide, ketene, isocyanate, etc. The fluorocarbon derivative is preferably applied to frankfurter sausage casing in the form of a solution or dispersion at the time of manufacture just prior to drying the casing. Fluorocarbon solution or dispersion may also be applied to the soak water for larger casings of the type used for bolognas or may be applied internally to coat such casings at the time of preparation. The use of casings soaked or impregnated with these water-soluble or water-dispersible fluorocarbons facilitates removal of the casing from the smoked and/or cooked sausages at a time when untreated casings could not be peeled from the sausage.

3,753,741

PROCESS OF PREPARING SLICED CANNED HAM

Maurice Z. Stewart, Dubuque, Iowa, assignor to Dubuque Packing Company, Dubuque, Iowa

Filed Jan. 21, 1971, Ser. No. 108,474
Int. Cl. A22c *18/00*; A23b *1/00*
U.S. Cl. 99—187 3 Claims



Sliced, canned meat, and in particular, ham or pork shoulder picnic, is prepared by a two-stage cooking process wherein the unsliced meat is first sealed in a container and subjected to an initial cooking and then chilled, removed from the container, sliced in such a manner that the ham retains its original configuration, and resealed along with minor amounts of honey and meat juices in a second container and finally subjected to a second cooking process. By this invention, a presliced, canned meat is obtained which retains the shape into which it was formed prior to slicing without the need for strings or bindings around the meat and which has been cooked, subsequent to slicing, in honey.

3,753,742

ELECTROLESS PLATING PROCESSES FOR ROOM TEMPERATURE DEPOSITION NICKEL

Harry F. Bell, Wappingers Falls; David W. Rich, Poughkeepsie, and Matthew C. Smith, Pleasant Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 124,590, March 15, 1971, abandoned. This application May 6, 1972, Ser. No. 241,586
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 7 Claims

A metal alkoxide additive enhances deposit rate, stability and efficiency at room temperature of certain electroless nickel plating systems. These are systems which utilize hypophosphite as a reducing agent and as a source of phosphorous for strengthening the deposits. The additive apparently operates to: (a) significantly retard bath decomposition at room temperatures; (b) activate the hypophosphite reducing agent, which characteristically is poorly reactive at room temperature, thereby promoting higher reduction rates; and (c) promote more efficient utilization of the bath materials. The sequence and method of combination of bath ingredients materially affects the bath efficiency.

3,753,743

METHOD FOR PREPARING GLASS BATCH

Hisashi Kakuda; Shiro Takahashi, and Junji Aki, all of Kitakyusyu, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Dec. 17, 1971, Ser. No. 209,067
Claims priority, application Japan, Dec. 18, 1970, 45/113093
Int. Cl. C03c *1/00, 3/04*
U.S. Cl. 106—52 4 Claims

In a method for preparing a glass batch using caustic soda solution as the main source of Na_2O for the glass, silica and other solid glass raw materials are first admixed and then the caustic soda solution is fed to the mixture. Preheated glass cullet is added to the mixture during the mixing operation, so that the water from the caustic soda solution is evaporated to provide a glass batch which is easily melted and refined and also is easily handled.

Preferably, hot gas containing carbon dioxide is supplied during the mixing operation.

3,753,744

GRAPHITE-ALUMINA-SILICON CARBIDE BASE REFRACTORY

Isamu Komaru; Kenzo Takeda, and Kazuo Yuki, all of Osaka, Japan, assignors to Nippon Crucible Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,394
Int. Cl. C04b *35/52*
U.S. Cl. 106—56 5 Claims

This invention provides a graphite-alumina-silicon carbide base refractory having good erosion resistance, spalling resistance and durable for oxidizing attack at elevated temperature. This refractory contains more than 85 wt. percent of main components of graphite (including combined carbon), alumina and silicon carbide (the weight ratio of graphite:alumina:silicon carbide being 10–38:60–80:2–18), and these three main components are combined with each other by a carbon bond which contains glassy material (2–6 wt. percent) and forms the network structure.

3,753,745

ZIRCONIUM OXIDE SERIES SPRAYING MATERIAL

Masaharu Shiroyama, and Eiji Noguchi, both of Fukuoka, Japan, assignors to Nippon Tungsten Company, Ltd., Fukuoka-shi, Japan

Filed June 4, 1971, Ser. No. 150,098
Claims priority, application Japan, June 4, 1970, 45/48517
Int. Cl. C04b *35/48*
U.S. Cl. 106—57 2 Claims

Zirconium-oxide series spraying materials in a powdered form prepared by mixing zirconium oxide powder with nickel or nickel oxide powder, pressing the mixture into a block, sintering the same under an oxidizing or reducing atmosphere into a briquette, then grinding the same and size-grading the resulting particles.

3,753,746

PERMEABLE REFRACTORY PRODUCTS

Otto Koerner, Rothstrasse 1062, Wiesbaden, Germany

Continuation-in-part of Ser. No. 676,061, Oct. 18, 1967, abandoned. This application Jan. 15, 1971, Ser. No. 106,709
Claims priority, application Great Britain, Oct. 19, 1966, 46,850/66
Int. Cl. C04b *35/04*
U.S. Cl. 106—58 10 Claims

A porous refractory body, primarily a porous plug for the refractory lining of a vessel containing molten metal through which plug gas can be blown into the metal. This body has a cold crushing strength of not less than 200 kg/cm² and consists of a coarse-grained refractory material with a minimum quantity of a suitable binding agent, and has permeable pores of a cross section not less than 0.05 mm and a gas permeability of at least 100, and preferably more than 500 nanoperm. The hot bending strength or modulus of rupture of the body at 1,400° C is from 20 – 60 kg/cm². The refractory material is mixed with the binding agent, and the mixture is compressed with a pressure of at least 300 kg/cm² before firing to bring substantially all of the grains into contact with adjacent grains.

3,753,747

HYDRATION RESISTANCE FOR DOLOMITE GRAIN

Ronald Staut, Cherry Hill, N.J., assignor to General Refractories Company, Philadelphia, Pa.

Filed Oct. 1, 1971, Ser. No. 185,869
Int. Cl. C04b *35/04, 35/06*
U.S. Cl. 106—58 10 Claims

The hydration resistance of a low-flux CaO · MgO refractory is increased by incorporating at least 0.01 percent by weight of a stabilizing agent selected from the group consisting of Al_2O_3, V_2O_5, aluminum fluoride, MgF_2, and CaF_2, and mixtures thereof to increase the total content of the stabilizing agent in the refractory grain to from 0.01 percent to about 1.0 percent by weight.

3,753,748

HYDRAULIC CEMENT RETARDER COMPOSITION

Robert C. Martin, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 42,569, June 1, 1970, Pat. No. 3,662,830. This application Dec. 23, 1971, Ser. No. 211,688
Int. Cl. C04b *7/02*
U.S. Cl. 106—90 1 Claim

In a method of cementing at relatively high ambient temperatures employing an aqueous hydraulic cement slurry, the improvement comprising admixing therewith an effective amount of both (1) a salt of lignosulfonic acid and (2) boric acid or a borate whereby a synergistic retarding effect on the setting rate of the slurry is attained without any accompanying adverse effects.

3,753,749

CONCRETE COMPOSITIONS

William Owen Nutt, Warlingham, England, assignor to The Cement Marketing Company Limited, London, England

Continuation-in-part of Ser. No. 41,305, May 28, 1970, abandoned. This application Aug. 12, 1971, Ser. No. 171,351
Int. Cl. C04b *7/02*
U.S. Cl. 106—93 7 Claims

In concrete compositions based on hydraulic cement, improved properties in respect of workability, especially mouldability, capacity for being impelled along a pipe as by pumping, and frost resistance in the concrete, are obtained by incorporating in the composition a minor proportion of dispersed cellulose fibres such as paper making fibres.

3,753,750

PROTECTING GRAIN IN STORAGE AREAS BY AN OXYCHLORIDE CEMENTITIOUS COMPOSITION

Harvey J. Davis, Springfield, Mo., assignor to M & D Enterprises, Inc., Springfield, Mo.

Filed Sept. 28, 1970, Ser. No. 76,130
Int. Cl. C04b *7/00*
U.S. Cl. 106—106 3 Claims

Protecting grain in storage areas by providing wall structures defining grain storage areas with an oxychloride cementitious composition formed by mixing dry magnesium chloride, magnesium oxide, asbestos, a particle waterproofing agent, granular material, and a mineral filler with sufficient water to form a plastic cementitious composition to be formed into walls for storage areas or placed on existing walls of extisting grain storage areas with the composition and walls thereof being rigid when cured. The composition is characterized by having sufficient porosity to permit air movement therethrough and thereby prevent formation of condensation resulting from rapid temperature drop outside the storage area and the composition inhibits growth of mold.

3,753,751

LIGHT WEIGHT BODIES OF COTTON FIBER REINFORCED HYDROUS ALKALINE EARTH METAL SILICATE THERMAL INSULATION MATERIAL

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 639,070, May 17, 1967, Pat. No. 3,562,084. This application Mar. 12, 1970, Ser. No. 26,466
Int. Cl. C04b *15/06*
U.S. Cl. 106—120 15 Claims

A synthetically prepared body of molded high temperature thermal insulation material composed essentially of a matrix of chemically combined alkaline earth metal silicate interspersed with cotton fibers tenaciously anchored into the matrix and providing reinforcement and increased structural strength and integrity to the insulation material. The cotton fibers are interspersed in the matrix of the insulation material in the form of individual or wound groupings of filaments, strands or rovings or the like and/or in the form of an open network fabric of interlocked or interwoven cotton fibers such as cotton mesh or cotton netting or the like.

3,753,752

SOIL CONTROL EMULSIONS

Armin C. Pitchford, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 26, 1971, Ser. No. 192,348
Int. Cl. C08h *13/00*; C08k *1/62*; C09d *3/24*
U.S. Cl. 106—277 2 Claims

A base oil consisting of asphalt and an aromatic oil is dispersed in an aqueous nonionic emulsifying solution to form an oil-in-water emulsion which is useful as a soil control agent.

3,753,753

METHOD OF TREATING CLAY TO IMPOVE OPTICAL PROPERTIES

David B. Kirby, Midland, and Roger D. Kroening, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 12, 1971, Ser. No. 115,114
Int. Cl. C08h *17/06*
U.S. Cl. 106—288 B 5 Claims

A method of improving the optical properties of clay which comprises forming an aqueous mixture of clay with magnesium oxide, and aging the mixture.

3,753,754

MIXED PHASES OF SPHENE STRUCTURE

Franz Hund, Krefeld-Bockum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 27, 1971, Ser. No. 166,374
Claims priority, application Germany, July 31, 1970, P 20 38 007.8
Int. Cl. C09c
U.S. Cl. 106—288 B 6 Claims

Synthetic mixed phases of sphene structure corresponding to the general formula $MMeZX_5$ or $MMeZX_4Y$ and comprising as host components pure or isotype mixed phases in which M = calcium and/or barium, Me = titanium and/or tin, Z = silicon, X = oxygen and Y = fluorine and/or hydroxyl, comprising at least about 0.1 percent by weight of at least one guest component in place of the aforementioned host components without any change in the sphene structure or in the electroneutrality, the guest component for Z being a di-valent to pentavalent cation with an ionic radius of less than about 0.6 A. and/or a zinc cation, for Me being a mono- to hexavalent cation with a radius of from about 0.45 A. to about 1.0 A. and for M being a mono-to tetra-valent cation with a radius of greater than about 0.9 A., the stoichiometric quantities for (Me+M):Z:(X+Y) being about 2:1:5.

3,753,755

SHEET MATERIAL COATED WITH HEAT HARDENABLE TACKY ADHESIVE

Melvin M. Olson, Richfield, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 855,361, Sept. 4, 1969, which is a continuation-in-part of Ser. No. 785,839, Nov. 5, 1968, abandoned. This application Apr. 26, 1971, Ser. No. 137,660
Int. Cl. C09j *7/02*
U.S. Cl. 117—3.1 10 Claims

Sheet material coated with heat-hardenable, tacky adhesive to form adhesive tapes, bonding films and simiar products. The tacky adhesive layer provides for temporarily adhering one structure to another at ordinary temperatures and can be subsequently heat-hardened to a strong, permanent bond. Another aspect of the invention relates to the tacky, heat-hardenable adhesive compositions themselves.

3,753,756

RETICULATED POLYURETHANE FOAM AND METHOD OF MAKING SAME

Walter E. Lox, 427 Shabbona, Park Forest, and William Petrich, 3426 Maple Lane, Hazel Crest, both of Ill.

Filed Sept. 10, 1971, Ser. No. 179,547
Int. Cl. B44c *1/22*
U.S. Cl. 117—8 5 Claims

Reticulated polyurethane foam produced by contacting the flexible foam, either of the polyether or polyester type, with orthotoluidine. In the highly preferred embodiment of the invention, the reticulation by means of ortho-toluidine is accompanied by coating the strands and nexi of the polyurethane skeletal structure with polyvinylpyrrolidone to render the polyurethane substantially non-toxic.

3,753,757

TWO STEP POROUS BOILING SURFACE FORMATION

Arthur Rodgers, Clarence, and Robert J. Weiner, Tonawanda, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 15, 1970, Ser. No. 37,649
Int. Cl. B44d *1/092, 1/094*
U.S. Cl. 117—22 12 Claims

A method of coating metal substrates with a porous metal layer, comprising the steps of:

a. providing a metal substrate to be porous metal coated;
b. applying a liquid binder solution consisting essentially of at least one high volatility solvent component and at least one low volatility component in a layer from 0.002 to 0.040 inch thick onto said metal substrate;
c. applying a 0.005 to 0.050 inch thick layer of metal powder 30–500 mesh onto the binder layer so that the binder layer wets the metal powder coating and is saturated thereby and retains substantially all of said powder against said metal substrate;
d. evaporating substantially all of the high volatility component of said liquid binder solution at about ambient temperature;
e. heating the metal powder coated metal substrate of (d) to temperature sufficient to evaporate substantially all of the binder low volatility component;
f. further heating the metal powder coated metal substrate to temperature sufficient to bond the metal powder to itself and to the metal substrate so as to form a porous metal layer having interconnected surface and subsurface cavities; and
g. cooling the porous metal layer bonded metal substrate.

3,753,758

OPEN PACK HEAT TREATMENT OF METAL SHEET MATERIAL USING SIZED PARTICLES AS SPACING MEANS

James J. Shanley, Montgomery County, Md., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Sept. 15, 1970, Ser. No. 72,545
Int. Cl. C23c *11/04*
U.S. Cl. 117—25 26 Claims

Chromized ferrous metal sheet material is prepared by a novel open pack chromizing process. In practicing the process, an adhesive composition, an adherent particulate coating of a source of chromium, and dispersed adherent spacing particles are applied on at least one side of the ferrous metal sheet material. The spacing particles are substantially uniform in size and larger than the chromium particles. The adhesive composition has an adhesive characteristic under the conditions of the process whereby an adherent coating containing the inert particles and chromium particles is formed in the absence of compaction. A plurality of layers of the coated sheet material are assembled into a pack, and the resulting open pack is subjected to an elevated chromizing temperature in a protective atmosphere and in the presence of a halogen-containing energizer to produce chromized ferrous metal sheet material. The adhesive for the spacing particles and chromium particles preferably includes the halogen-containing energizer. The invention further provides composite ferrous metal sheet material coated with the adhesive, the chromium particles and the spacing particles which is especially useful for preparing open packs for chromizing. The invention is also useful when practicing other processes wherein ferrous metal or other metal sheet material is heat treated, such as carburizing, decarburizing, nitriding and diffusion processes in general wherein a metallic or a non-metallic substance is intimately contacted with the ferrous metal or other metal sheet material and diffused into the surface thereof.

3,753,759

METHOD OF MANUFACTURING ARC DISCHARGE LAMPS

Andre C. Bouchard, Peabody; Peter W. Gaudet, Lynn, and Martha J. B. Thomas, Winchester, all of Mass., assignors to Sylvania Electric Products, Danvers, Mass.

Continuation of Ser. No. 694,815, Jan. 2, 1968, abandoned. This application Sept. 3, 1971, Ser. No. 177,835

Int. Cl. B44d *1/44*; C03c *17/30*

U.S. Cl. 117—33.5 L 4 Claims

An atmosphere of nitrogen dioxide is used in baking phosphor-coated lamps during manufacture, thereby reducing the baking time and temperature required for elimination of the organic binders in the phosphor coating. Improved lamp efficiency and maintenance also results from the use of the nitrogen dioxide.

3,753,760

LIQUID ELECTROSTATIC DEVELOPMENT USING AN AMPHIPATHIC MOLECULE

George E. Kosel, Park Ridge, N.J., assignor to Philip A. Hunt, Palisades Park, N.J.

Continuation-in-part of Ser. No. 810,841, March 26, 1969, abandoned. This application Jan. 30, 1970, Ser. No. 7,253

Int. Cl. G03g *13/10*

U.S. Cl. 117—37 LE 28 Claims

A liquid toner with a number of solids less than those conventionally used in a multi-component liquid toner, obtained by combining the functional characteristics of plural previous different kinds of solids into a complex molecule, thereby obtaining better image fixation, improved resistance to preferential depletion, improved image definition, clear background, improved shelf life, improved functional life and a broad color range.

3,753,761

PRESSURE SENSITIVE RECORDING PAPER

Yojiro Sugahara, Tokyo; Kaichiro Miyazawa, Tsuruoka; Tadahisa Nakazawa, and Masahiro Maeno, both of Nakajyo, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 775,126, Nov. 12, 1968, Pat. No. 3,622,364

This application Aug. 31, 1971, Ser. No. 176,743

Int. Cl. B41m *5/22*

U.S. Cl. 117—36.2 4 Claims

A pressure sensitive recording paper comprising a paper substrate and a coating thereon comprising a color former which comprises a member selected from the group consisting of acid-treated dioctahedral montmorillonite clay minerals and mixtures of such minerals with natural dioctahedral montmorillonite clay minerals, the minerals having a secondary color development property, K_2, of at least 1.40, the value of K_2 being represented by the formula

$$K_2 = R_{430}/R_{550} + \tfrac{1}{2}(1-R_{550})$$

wherein R_{430} and R_{550} are reflectances of light having wavelengths 430 mμ and 550 mμ, respectively, when the minerals are developed by benzoyl leuco methylene blue.

3,753,762

METHOD OF GALVANIZING

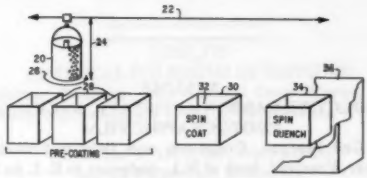
William H. Garrison, Richmond, Va., assignor to American Spin-A-Batch Company, Richmond, Va.

Continuation of Ser. No. 771, Jan. 5, 1970, abandoned. This application May 22, 1972, Ser. No. 255,806

Int. Cl. C23c *1/02*

U.S. Cl. 117—51 16 Claims

A method of galvanizing batches of articles wherein the articles are placed in a perforate basket which is suspended from a rail above a workpath. The thusly suspended articles are first dunked in pickling, rinsing and fluxing solutions and then into a zinc bath where the basket and articles are spun to remove flux. The basket is then removed from the bath, moved directly to a position over a quench tank and again spun so that spelter falls into the tank for removal as shot. The basket



and articles are also spun while being lowered into the quench tank; after the quenching step; and during certain of the other above described steps so as to result in varying degrees of product improvement.

3,753,763

COATINGS FOR COLUMBIUM AND COLUMBIUM BASE ALLOYS

Barry D. Reznik, Brooklyn, N.Y., assignor to The United States of America as represented by the Atomic Energy Commission, Washington, D.C.

Filed Jan. 24, 1964, Ser. No. 340,112

Int. Cl. C23f *14/00*; C23b *11/00*; B23p *3/20*

U.S. Cl. 117—62 9 Claims

A method of protectively coating columbium and columbium-base substrates for service at temperatures above 2000° F comprising spray coating the substrate with a slurry consisting of a powdered mixture of silicon, aluminum and silver in a lacquer followed by diffusion treating the coated substrate in an inert atmosphere at a temperature in the range of 1900° F. to 2300° F. to form a layer of silicide intermetallic compounds adjacent the substrate and a layer of silver-silicon-aluminum alloy overlaying the first layer.

The invention described herein was made in the course of, or under a contract with the U.S. Atomic Energy Commission.

3,753,764

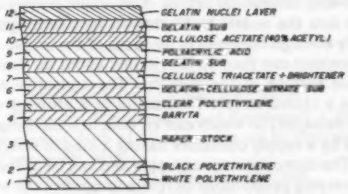
PHOTOGRAPHIC DIFFUSION TRANSFER PRODUCT AND PROCESS

John A. Haefner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1970, Ser. No. 91,043

Int. Cl. B05c *9/04*

U.S. Cl. 117—68 6 Claims



A receiving sheet for use in a diffusion transfer process comprises a polyolefin surface such as polyethylene over

which is coated a cellulose ester layer such as cellulose triacetate, an acid layer such as polyacrylic acid, a timing layer and an image receiving layer. The image receiving layer can be a nucleated layer for use in black-and-white diffusion transfer or a mordanted layer for use in color diffusion transfer.

3,753,765

CONDUCTIVE CARBON ANTISTATIC BACKING FOR PHOTOGRAPHIC FILM

James Gall Morgan, Cranbury, and Delmar Francis Schumacher, Freehold, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 20, 1971, Ser. No. 182,153
Int. Cl. G03c *1/82*; C08k *1/16*
U.S. Cl. 117—76 F **10 Claims**

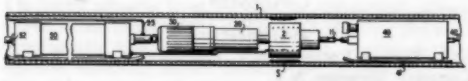
An opaque film element suitable for photographic inverse transfer elements comprising a dimensionally stable hydrophobic macromolecular organic film base containing a sufficient amount of a dispersed black pigment to provide an optical density of at least 8.0 and bearing on one surface a non-tacky anchoring layer of a vinylidene chloride/alkyl acrylate/itaconic acid terpolymer, said layer being coated with an antistatic composition comprising an aqueous dispersion containing a coalescible ternary copolymer of methyl methacrylate/ethyl acrylate/methacrylic acid, finely divided, highly conductive, carbon black and optionally, particles of a polyfluoroethylene resin, the resulting layer having a resistivity of $<10^7$ ohms per square. The opposite surface may have an anchoring layer as described above or may be otherwise treated to receive a colloid receptive layer for diffusion inverse transfer processes or a colloid-silver halide emulsion layer.

3,753,766

METHOD FOR SEALING PIPELINES

George A. Brown, Casselberry, Fla., and Francis Michael Hinds, Decatur, Ala., assignors to Southern Line Cleaning, Inc., Casselberry, Fla.

Filed Jan. 6, 1971, Ser. No. 104,424
Int. Cl. B44d *1/02*
U.S. Cl. 117—97 **5 Claims**



A slinger nozzle or head assembly is moved through a pipeline to coat the interior thereof. The nozzle is normally positioned adjacent joint seams or other leak sites and rotated to develop centrifugal action. A cureable sealing composition is fed into the nozzle to be thrown by centrifugal force outwardly through openings in the sides of the nozzle. The sealing composition can then be distributed about the leak site on the interior surface of the pipeline. The operative assembly includes a closed circuit TV camera in a protective casing (or other detector) to which can be attached the slinger head followed by a supply container having a load of sealing composition. The composition is cureable and can be of the epoxy type with varying proportions of fillers to control the viscosity and catalyst curing agent to regulate the curing time. An inhibitor and/or accelerator can be included to prolong or lessen the pot life of the composition, particularly at higher temperatures.

3,753,767

METHOD OF SUGAR-COATING TABLETS

Wallace E. Becker, Franksville, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,367
Int. Cl. B44d *1/08*
U.S. Cl. 117—100 A **4 Claims**

Tablets are sugar-coated with an aqueous sugar-coating solution which comprises about 5 percent to 30 percent by weight of calcium sulfate dihydrate. The coating solution is adaptable to automatic application which greatly reduces the time normally required for sugar-coating tablets. The tablets obtained possess good elastic and mechanical strength.

3,753,768

ALIMINUM PLATING PROCESS

Eiichi Ichiki; Kazuo Iida; Yasuhiko Inoue, and Yoshihiro Kondo, all of Niihama, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Oct. 30, 1970, Ser. No. 85,823
Claims priority, application Japan, Nov. 1, 1969, 44/87965
Int. Cl. C23c *1/02*
U.S. Cl. 117—107.2 **38 Claims**

Aluminum plating according to which aluminum film formed has no cracks and pin-holes on its surface, a uniform thickness, excellent luster and is strongly bonded to the substrate can be attained by heat treating a substrate covered with aluminum at 400° C the melting point of aluminum for 10 seconds 30 minutes in an inert atmosphere said heat treatment being preceded by or followed by treating of the covered substrate with a surface treating agent comprising active hydrogen-containing compound, oxygen or halogen and thereafter taking out thus treated substrate into the air.

3,753,769

COATING COMPOSITION AND PLASTIC ARTICLES COATED THEREWITH

Robert H. Steiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 561,367, June 29, 1966, abandoned. This application July 2, 1971, Ser. No. 159,532
Int. Cl. C08j *1/40*; C08f *45/52*
U.S. Cl. 117—122 H **2 Claims**

An acrylic based terpolymer coating composition, adapted for use in coating polyolefin films, comprising an interpolymer of (a) from about 2 to about 15 parts by weight of an α-βmonoethylenically unsaturated carboxylic acid and (b) from about 85 to about 98 parts by weight of neutral monomer esters comprising an alkyl acrylate ester and an alkyl methacrylate ester.

3,753,770

FIRE RETARDANT COMPOSITIONS CONTAINING NITROGEN-PHOSPHOROUS-HALOGEN ADDUCTS

George L. Braude, and Eldon E. Stahly, both of Ellicott City, Md., assignors to W. R. Grace & Co., Washington Research Center, Columbia, Md.

Filed Nov. 30, 1971, Ser. No. 203,420
Int. Cl. B44d *1/22*
U.S. Cl. 117—138 **4 Claims**

A process of producing flame resistant layers, which comprises treating cured resins or cured formed resinous bodies with the vapor of phosphorus trichloride and thereafter subjecting the treated resins to the vapors of ammonia. Satisfactory flame resistance is given by concentrations of the halide moiety of between 5 and 20 percent by weight of the resin.

3,753,771

PROTECTIVE FINISH FOR SYNTHETIC FIBERS

Frank Holmes Simons, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Filed July 30, 1971, Ser. No. 167,811
Int. Cl. B44d 1/22
U.S. Cl. 117—138.8 F 16 Claims

Protection of synthetic fibers or yarns, e.g., polyamide homopolymers and copolymers, from harmful heat/moisture effects, such as that encountered in steam jet bulking, by coating the fibers or yarns with a small but effective amount of a water-soluble, alkaline polyethylene glycol.

3,753,772

METHOD AND COMPOSITION FOR PROVIDING ANTISTATIC AND ANTI-SOILANT PROPERTIES IN HYDROPHOBIC FIBERS

Sidney Cohen, Hillsdale, N.J., and Morton Schlesinger, New York, N.Y., assignors to Mill-Master Onyx Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 665,957, Sept. 7, 1967, abandoned. This application June 28, 1971, Ser. No. 157,635
Int. Cl. D06m 13/02; C09r 3/16
U.S. Cl. 117—139.5 F 4 Claims

A method of treating hydrophobic fibrous material to provide both an antistatic and anti-soilant coating which consists of applying to the fibrous material, such as a carpet or rug, a composition containing, as the active ingredient, a condensation product of higher saturated fatty acid and either tetraethylene pentamine or triethylene tetramine.

3,753,773

COATING OF POLY-PARA-HETEROCYCLIC-XYLENE POLYMER

Stuart M. Lee, Palo Alto, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 67,458, Aug. 27, 1970, abandoned. This application Apr. 26, 1972, Ser. No. 247,623
Int. Cl. C23c 13/04
U.S. Cl. 117—161 UA 9 Claims

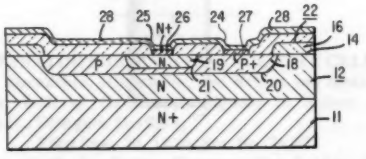
A deposition process and product obtaining a coating on an object of a poly-para-heterocyclic-xylylene polymer wherein a dimer is vaporized in a front portion of the chamber obtaining diradicals of para-xylylene, and deposited on a surface of the object in a third portion of the chamber thereby obtaining a coating of the poly-para-heterocyclic-xylylene polymer on the surface of the object.

3,753,774

METHOD FOR MAKING AN INTERMETALLIC CONTACT TO A SEMICONDUCTOR DEVICE

Harold Seymour Veloric, Morristown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,340
Int. Cl. B44d 1/18; H01g 9/00
U.S. Cl. 117—212 7 Claims



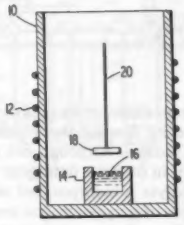
The method includes the step of depositing a semiconductor layer on a surface of a semiconductor body. A metal layer, selected from the metals which will form an intermetallic compound with the semiconductor layer, is deposited on the semiconductor layer and treated to form an intermetallic compound. The treatment step and the thickness of the metal and semiconductor layers is controlled in order to control the depth to which the intermetallic contact extends into the body.

3,753,775

CHEMICAL POLISHING OF SAPPHIRE

Paul Harvey Robinson, and Richard Oren Wance, both of Trenton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 1, 1971, Ser. No. 122,620
Int. Cl. C23b 5/62; B44d 1/18
U.S. Cl. 117—213 7 Claims



The [1T02] crystallographic oriented surface of a sapphire body is chemically polished by heating the body to a temperature of between 1,000°C and 1,200°C and contacting the surface of the body with vapors of borax.

3,753,776

METHOD OF REMOVING DEPOSITS FORMED IN BAUXITE EXTRACTION

Gunter Winkhaus, Koeln-Suelz; Gerhard Wargalla, and Fritz Kampf, both of Luenen, all of Germany, assignors to Vereinigte Aluminum-Werke Aktiengesellschaft, Bonn, Germany

Filed Sept. 30, 1970, Ser. No. 76,996
Claims priority, application Germany, Sept. 30, 1969, P 19 49 287.6
Int. Cl. C23g 1/02; C01f 7/14
U.S. Cl. 134—3 7 Claims

In the continuous extraction of bauxite with sodium aluminate liquor wherein the bauxite is decomposed at a temperature above 180°–200°C, a deposit forms on the walls of the vessel. The deposit, more than 50 percent of which may consist of titanium dioxide, is difficult to remove. It has been found that this deposit can be removed by treatment with a mixture of hydrochloric and hydrofluoric acids when moved continuously over the surface of the deposit. It has also been found that the deposit can be removed with high-velocity jets of water, preferably containing a surface-tension reducing agent. Deposits formed at temperatures below 180°–200°C consist principally of sodium aluminum silicate and can be removed with hydrochloric or sulfuric acid.

3,753,777

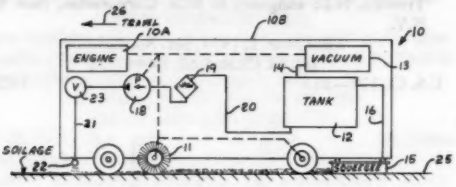
SURFACE CLEANING METHOD

Donald L. Thomsen, Minneapolis, and Ferdinand J. Herpers, Jr., Minnetonka, both of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Oct. 13, 1971, Ser. No. 188,760
Int. Cl. B08b 7/04, 3/08, 1/04
U.S. Cl. 134—6 22 Claims

A method for cleaning surfaces such as floors and pavements that includes incorporating a polyelectrolyte in the

cleaning solution and a surface scrubbing machine for carrying out the process. As specifically disclosed, the method comprises applying the cleaning solution to the surface together with agitating the solution on the surface to cause formation of flocs, removing the floc containing solution from the surface by, for example, squeegeeing, and returning the recovered solution to a solution tank and, if desired, separating out the flocs. With a scrubbing machine the solution tank is on the machine, and the agitation may be provided by, for example, a



rotary brush on the machine, or by applying the cleaning solution to the surface by forcing the solution under pressure through discharge nozzles. Although not necessary for some cleaning operations, in others a detergent or soap compatible with the polyelectrolyte is incorporated in the solution. With various combinations of polyelectrolyte and detergent, the addition of a suitable flocculation aid such as metallic salts to the solution enhances the degree of flocculation and the strength and size of the flocs.

3,753,778

METHOD OF FORMING NEGATIVE ELECTRODES

Harold A. Christopher, Scotia, N.Y.; Dorus E. Faires, Gainesville, Fla.; Ethel L. Fonatella, Burnt Hills, and Randall N. King, Johnstown, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed July 25, 1972, Ser. No. 274,851
Int. Cl. H01m *35/30*
U.S. Cl. 136—24 **4 Claims**

A method of forming a dry, fully-charged negative electrode includes electrochemically charging completely initially electrodeposited cadmium hydroxide thereby forming spongy metallic cadmium which is formed further into an electrode.

3,753,779

METHOD OF MAKING ZINC ELECTRODES

John Franko, New York, and William J. Ryan, Bethpage, both of N.Y., assignors to Leesona Corporation, Warwick, R.I.

Filed June 14, 1968, Ser. No. 736,952
Int. Cl. H01m *43/02*
U.S. Cl. 136—31 **5 Claims**

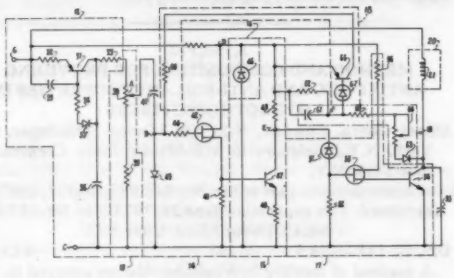
Improved anodes comprising dendritic zinc suitable for use in electrochemical devices such as primary and secondary cells and methods for preparing the anodes are disclosed. These methods are: (1) coating a porous support with, or shaping an electrode from already-prepared zinc dendrites; (2) in situ reduction of a porous substrate coated with a zinc compound; and (3) electrodeposition of zinc dendrites from a solution of a zinc compound onto a porous support. The above methods include various washing steps which prevent side reactions between the zinc dendrites and other substances which may be present during the production and use of the anodes. Various molding and shaping steps may also be included, and in situ amalgamation, or amalgamation of the finished anodes is generally desirable. These anodes have unusually high surface area, porosity and efficiency.

3,753,780

FLUCTUATION SENSITIVE FUEL CELL REPLENISHMENT CONTROL MEANS

Donald L. Fetterman, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 30, 1971, Ser. No. 185,009
Int. Cl. H01m *27/12*
U.S. Cl. 136—86 B **3 Claims**



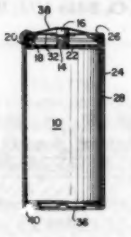
This invention relates, in general, to electrical energy source regulation means and in particular, to means for replenishment of selected energy sources, such as fuel cells, having a voltage-load function characteristic curve which must be maintained at all load levels for optimum performance of the system. In this invention, electronic control means adapted to sense minute fluctuations in the output voltage and load current serve to actuate replenishment means, as appropriate, to maintain the voltage level per each load point on the characteristic curve.

3,753,781

DRY CELL HAVING THIN FILM SEAL

Ronald S. Parker, and Ronald Reilly, both of Teheran, Iran, assignors to Union Carbide Iran S.A., Teheran, Iran

Filed Apr. 4, 1972, Ser. No. 240,919
Int. Cl. H01m *21/00*
U.S. Cl. 136—107 **4 Claims**



A method for packaging a dry cell in an outer metal jacket and a dry cell construction employing a thin film seal covering one terminal of the cell, the seal being locked between the metal jacket and an insulating sleeve surrounding the cell.

3,753,782

ELECTRODE FOR ELECTROCHEMICAL REDUCTION OF OXYGEN AND PROCESS FOR ITS PRODUCTION

Klaus Beccu, Troinex/GE; Manfred Gutjahr, Carouge/GE; Jack Ambert, Onex/GE, and Helmuth Keiser, Vessy, all of Switzerland, assignors to Battelle Memorial Institute, Carouge/GE, Switzerland

Filed June 22, 1971, Ser. No. 155,613

Claims priority, application Switzerland, June 23, 1970, 9628/70

Int. Cl. H01m *13/00*

U.S. Cl. 136—120 FC 12 Claims

An electrode for electrochemical reduction of oxygen in an alkaline electrolyte and a process for the production of such electrode, comprising moulding a powder mixture containing as catalyst materials for activating oxygen conversion at least two of the metals nickel, cobalt, iron and manganese and active carbon and sintering the particles of the powder mixture to form an electrode body thereof containing non-stoichiometric mixed carbides.

3,753,783

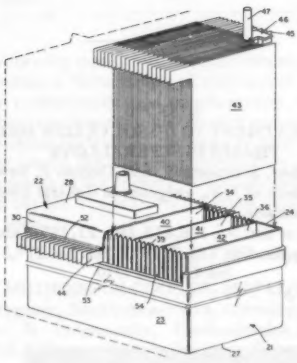
BATTERY, COMPONENTS, AND METHOD OF MAKING

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Nov. 24, 1971, Ser. No. 201,818

Int. Cl. H01m *5/00*, *35/32*

U.S. Cl. 136—134 R 14 Claims



A battery is provided, generally of the lead acid storage battery type, having spaced plates therein, with selected plates connected together in electrically conductive fashion, and with plates on opposite sides of cell partitions being connected, wherein particularly novel types and placements of such connections facilitate low resistance in connections between plates and preferably facilitate inclusion of greater quantities of acid within a battery, by effecting such connections externally of the battery casing.

3,753,784

SEPARATOR FOR MAINTENANCE-FREE CELLS

Werner Eisenacher, Hildesheim, and Eckart von Roda, Diekholzen, both of Germany, assignors to Robert Bosch, G.m.b.H., Stuttgart, Germany

Filed Sept. 28, 1970, Ser. No. 76,071

Claims priority, application Germany, Oct. 3, 1969, P 19 49 958.2

Int. Cl. H01m *3/02*, *3/04*

U.S. Cl. 136—145 11 Claims

A separator for a maintenance-free cell consisting of several layers and being sufficiently porous to serve as the electrolyte holder. At least one of the layers is micro-porous, resistant to migration of heavy metal ions, and proof against short circuits.

3,753,785

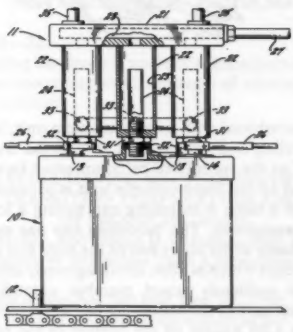
ACID MIXING METHOD

Thomas L. Oswald, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Filed Mar. 29, 1972, Ser. No. 239,203

Int. Cl. H01m *45/00*

U.S. Cl. 136—161 5 Claims



A method for adjusting upward the acid concentration of the electrolyte in a lead-acid battery "formed" by charging with electrolyte at low acid concentration, in which high concentration acid electrolyte is added to the battery, the battery is charged for a short time interval at high current to produce violent gassing and thus drive a substantial portion of the electrolyte out of the battery, vacuum is applied to draw off the gas, and the then-mixed electrolyte is allowed to flow back into the battery.

3,753,786

METHOD AND APPARATUS FOR ADJUSTING BATTERY ELECTROLYTE CONCENTRATION

Thomas J. Asta, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Filed Mar. 29, 1972, Ser. No. 239,023

Int. Cl. H01m *45/00*

U.S. Cl. 136—161 4 Claims

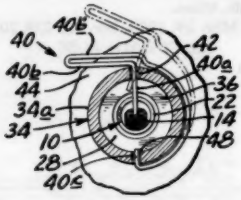
After formation, a substantial portion of the dilute acid electrolyte is driven from each cell of a lead acid battery by applying a charging current to the battery and a vacuum chamber to each cell. An adjustable amount of this electrolyte is separated for removal from each cell by a standpipe, and the remaining electrolyte is returned to the respective cells. A fixed amount of high acid concentration electrolyte is then added to each cell so that the resulting mix is at the desired acid concentration level for normal operation of the battery. By adjusting the amount of removed dilute electrolyte in accordance with battery size and capacity, a proper final acid concentration level results from adding a given amount of high concentration acid to the cells of each size and type of battery.

3,753,787

SPRING LOADED THERMOCOUPLE UNIT AND MOUNTING CAP THEREFOR

Winfield Scott Webb, Deerfield, Ill., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed Sept. 15, 1971, Ser. No. 180,795
Int. Cl. H01v *1/02*
U.S. Cl. 136—221 **11 Claims**



There is combined with a thermocouple unit, having a coil spring encircling and mounted on at least the front end portion thereof so the spring can be compressed forwardly while the front end of the thermocouple unit is pressed against the inner wall of a bore, a mounting cap having a longitudinally extending passageway. The mounting cap has means for attaching the same at the outer end of the bore and a retractable abutment means which is most advantageously an inwardly extending and resiliently urged member extending laterally across at least part of the mounting cap passageway and connecting with a lift handle on the outside of the mounting cap which is raised to retract the abutment to permit the thermocouple unit to be quickly and easily moved within the mounting cap passageway and pressed against the end of the bore while maintaining the spring under compression. Release of the handle unit establishes an abutment for the compressed spring upon release of the thermocouple unit, and the end of the abutment frictionally engages the thermocouple unit to inhibit relative rotational movement between the mounting cap and the thermocouple unit.

3,753,788

NON-RIBBING FERRITIC STEEL AND PROCESS

John Edward Fogarty; Stanley Paul Odar, both of Canton, and Glenn Donald Angerman, Massillon, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 814,188, July 7, 1969, abandoned. This application Oct. 15, 1971, Ser. No. 189,787
Int. Cl. C22c *39/16*; C21d *7/14*
U.S. Cl. 148—2 **4 Claims**

Low carbon ferritic stainless steel containing about 14–18 percent chromium, 0.0005 to 0.005 percent boron, up to about 0.12 percent, and preferably 0.02 to 0.12 percent columbium, characterized by substantial freedom from ribbing in unidirectionally hot rolling and thence unidirectionally cold rolling into thin gauge strip; also cold rolled strip in long lengths made of said steel and methods of producing same.

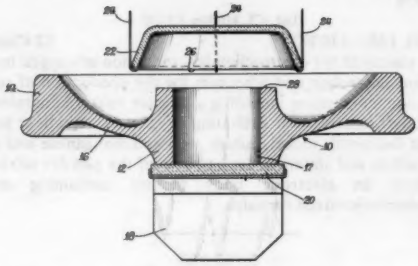
3,753,789

MAKING CAST STEEL RAILWAY WHEELS

William James Kucera; Albert Thomas Wendt, both of Elmhurst, Ill., and Louis Sandor, Hammond, Ind., assignors to Amsted Industries, Incorporated, Chicago, Ill.

Filed Feb. 23, 1972, Ser. No. 228,690
Int. Cl. C21d *1/28*
U.S. Cl. 148—3 **3 Claims**

In the cooling of a steel railway car wheel having relatively thick hub and tread portions and a relatively thin plate portion, it is important that undue stresses are not set up in the plate portion and, simultaneously, that the tread is hardened for good wear qualities while the hub is kept soft for easy machinability. These objectives are achieved by providing a conveyor having suspended thereover, at spaced intervals, non-metallic insulating disks having a diameter approximately equal to or slightly larger than the wheel hub diameter, moving the wheels in intermittent steps along the conveyor so that the wheels stop for a predetermined period of time directly under successive disks until the hubs have cooled from a temperature of about 1,700° F. to below the critical transformation temperature which is about 1,200° F., the other portions of the wheels having cooled at a faster rate.

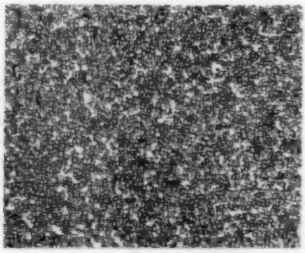


3,753,790

HEAT TREATMENT TO DISSOLVE LOW MELTING PHASES IN SUPERALLOYS

James L. Walker, Schenectady, and Thomas F. Sawyer, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 100,053, Dec. 21, 1970, abandoned. This application Aug. 2, 1972, Ser. No. 277,373
Int. Cl. C22f *1/10*
U.S. Cl. 148—3 **4 Claims**



A progressive heat treatment of a superalloy is disclosed wherein the segregated low melting phases are dissolved in solid solution and diffused through the structure without melting the matrix metal and without incipiently melting any of the low melting phases. The heat treatment begins at a temperature just below that of the lowest melting constituent and finishes at a temperature below the fusion temperature of the alloy. The time of heat treatment at each successive increasing temperature is sufficient to accomplish enough diffusion to avoid melting on subsequent temperature increases, until the various phases are substantially solutionized.

3,753,791

HEAT-TREATMENT OF ZINC/ALUMINIUM ALLOYS

Colin John Swanson, Horfield, England, assignor to Imperial Smelting Corporation (Alloys) Limited, London, England

Filed Jan. 4, 1971, Ser. No. 103,911

Claims priority, application Great Britain, Jan. 1, 1970, 29/70

Int. Cl. C22f *17/00*

U.S. Cl. 148—11.5 R 10 Claims

Zinc/aluminium alloys containing 18 to 40 percent aluminium are rendered superplastic by annealing in the single-phase solid region, cooling to below 275° C at not more than 10° C per minute, and, simultaneously with and/or subsequently to cooling, working to at least 90 percent reduction above 200° C at least half of which working is carried out below 275° C. Optionally the alloy is cooled below 200° C and then reheated to the given range for some or all of the working.

3,753,792

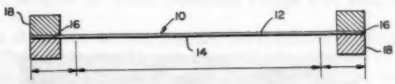
METHOD OF ACHIEVING THERMALLY BALANCED HOT WIRE RELAY TYPE DEVICES

Hugh Jean Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 838,501, July 2, 1969, Pat. No. 3,684,994. This application Dec. 9, 1971, Ser. No. 206,393

Int. Cl. C22f *1/10*

U.S. Cl. 148—13 10 Claims



A hot wire relay type device, formed from an alloy composition exhibiting a characteristic of mechanical shape memory as a result of martensitic-type transformation, is produced for use as a heat reactive controller in such manner that the supported terminal portions do not react to heat or, at the very least, heat above the transition temperature simultaneously with the portion of the device intermediate such terminal portions whereby the wire achieves a thermal balance throughout its entire body.

3,753,793

METHOD FOR COOLING METAL WEBS

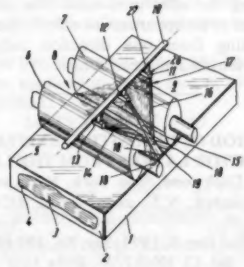
Elmar Wagener, Neukirchen-Vluyn, Germany, and Frantisek Jansch, U Pergamenky, Czechoslovakia, assignors to DEMAG Aktiengesellschaft, Duisburg, Germany

Filed Oct. 27, 1971, Ser. No. 192,885

Claims priority, application Germany, Nov. 3, 1970, P 20 53 947.3

Int. Cl. C22f *1/00*

U.S. Cl. 148—13 7 Claims



The disclosure relates to a method and to an apparatus for cooling continuously cast webs of metal. Several coolant jets are produced continuously and at least two jets are projected to a hotter, slowly cooling zone of the surface of the webs.

3,753,794

INTERLAYER FOIL FOR DIFFUSION BONDING

Daniel F. Paulonis, Killingworth; David S. Duvall, Middletown, and Rodney H. Hawkins, Naugatuck, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 20, 1972, Ser. No. 236,500

Int. Cl. C22c *19/00*

U.S. Cl. 148—32 5 Claims

For use in the diffusion bonding of the nickel-base superalloys, a normally brittle interlayer material significantly matched in composition to the superalloy is provided as a thin ductile foil of relatively low overall melting point.

3,753,795

SPARK PLUG ELECTRODE

John Herbert Weber, Sloatsburg, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1971, Ser. No. 168,364

Int. Cl. C22c *19/00*

U.S. Cl. 148—32 8 Claims

A spark plug electrode is made of a dispersion-strengthened nickel alloy containing small amounts of aluminum and, optionally, chromium.

3,753,796

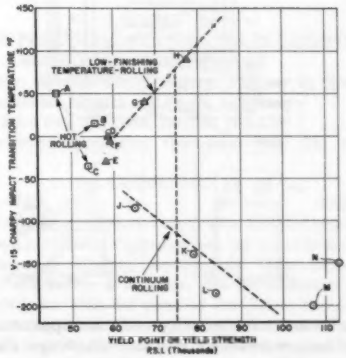
ROLLED STEEL HAVING HIGH STRENGTH AND LOW IMPACT TRANSITION TEMPERATURE AND METHOD OF PRODUCING SAME

George F. Melloy, and Joseph D. Dennison, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 786,844, Dec. 20, 1968, Pat. No. 3,645,801, which is a continuation-in-part of Ser. No. 741,372, June 27, 1968, abandoned. This application June 24, 1971, Ser. No. 156,215

Int. Cl. C21d *9/46*

U.S. Cl. 148—36 4 Claims



Rolled steels characterized in their as-rolled condition by an unexpected combination of high strength and low impact transition temperature. The product is produced by rolling a steel workpiece containing both austenite and ferrite, preventing complete recrystallization at any time thereafter, and continuing the rolling of said workpiece as it is cooling in the temperature range between the Ar_1 temperature and 600°F.

ERRATUM

For Class 148—50 see:
Patent No. 3,753,454

3,753,797

PROCESS FOR HEAT TREATMENT OF METALLIC STRINGS FOR STRINGED INSTRUMENTS

Hiroshi Fukuda, Iwata, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan

Filed July 26, 1971, Ser. No. 165,895

Claims priority, application Japan, July 27, 1970, 45/65875; Apr. 8, 1971, 46/22011

Int. Cl. C21d 9/52

U.S. Cl. 148—131 6 Claims

A string of a stringed instrument is heat treated to a temperature less than its annealing or softening temperature under tensile stress to reduce residual stress in the string and thereby minimize tonal variation over long periods of time after the string has been strung in the instrument. The string is electrically heated, optionally after stringing in the instrument. The tensile stress is 40–160 kg/mm² and the heating temperature is 150°–400°C.

3,753,798

PROCESS AND APPARATUS FOR THE PARTIAL OR LOCALIZED TEMPERING OF A STEEL SHEET-OR THE LIKE STOCK

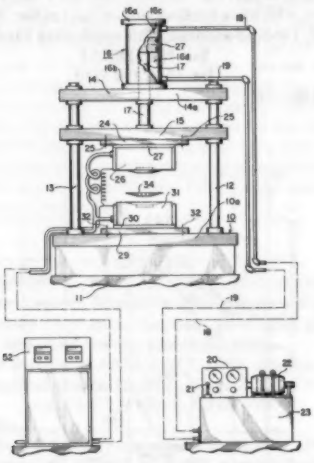
Noboru Komatsu; Takatoshi Suzuki; Takuo Ito, all of Nagoya-shi; Yoshiteru Hara, Chiryu-machi, Hekikai-gun, and Kouichi Asakura, Kariya-shi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho and Aisin Seiki Company Limited, Nagoya-shi, Aichi-ken, Japan

Filed Jan. 22, 1970, Ser. No. 5,072

Claims priority, application Japan, Jan. 25, 1969, 44/6130

Int. Cl. C21d 1/18

U.S. Cl. 148—131 8 Claims



This invention relates to a process and apparatus for the localized temper treatment of a steel diaphragm clutch spring. In the inventive process a pair of die members adapted for cooperation with each other and having each a working surface to cover a local area of the steel diaphragm spring to be locally tempered is heated to a temperature at least a tempering temperature of the diaphragm spring and then the diaphragm spring is placed between the die members and squeezed therebetween under pressure, thereby the diaphragm spring being heated up to its tempering temperature at said local area to be tempered through heat conduction from the dies to the diaphragm spring. The inventive apparatus comprises in combination: a first and second die members relatively movable towards and from each other; heating means attached to each of said die members for heating them at a temperature above the tempering temperature forming to its desired shape when squeezed between the cooled die members under pressure.

3,753,799

HEAT TREATMENT OF ALLOY STEEL PARTS

Kenneth Howard Wells, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 1, 1971, Ser. No. 148,747

Claims priority, application Great Britain, Mar. 31, 1971, 8,362/71

Int. Cl. C23c 9/14

U.S. Cl. 148—15.5 7 Claims

A method of heat treating a high-chromium alloy steel part comprises maintaining the part in a fused salt mixture of cyanides and cyanates of potassium and sodium and controlling the mixture so as to maintain a desired ratio of sodium and potassium and desired proportions of cyanide and cyanate radicals.

3,753,800

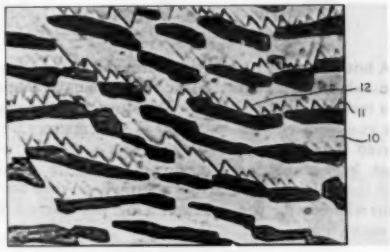
METHOD OF MAKING NICKEL-CHROMIUM-BERYLLIUM ALLOY

Leonard B. Griffiths, and Yuan-Shou Shen, both of North Reading, Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Division of Ser. No. 832,335, June 11, 1969, Pat. No. 3,704,182, which is a continuation-in-part of Ser. No. 793,814, Jan. 24, 1969, abandoned. This application Apr. 21, 1971, Ser. No. 136,229

Int. Cl. C22f 1/10

U.S. Cl. 148—162 8 Claims



This invention relates to a method of making nickel-chromium-beryllium alloy having a microstructure which provides obstacles to plastic flow in the nickel rich matrix phase so that high strength properties are obtained at both room and elevated temperatures. The alloy may also contain other additives including aluminum and/or titanium together with hardeners including molybdenum and/or tungsten, with or without carbon. A method of processing the alloy comprises melting the alloying ingredients in a crucible while avoiding the presence of oxygen; raising the temperature to 1,450° to 1,550°C; casting the alloy in a mold. The alloy may be remelted and cast in an apparatus to effect abstraction of heat from the casting from one direction only to obtain a directionally orientated microstructure.

3,753,801

METHOD OF DEPOSITING EXPITAXIAL SEMICONDUCTOR LAYERS FROM THE LIQUID PHASE

Harry Francis Lockwood, New York, N.Y., and Donald Paul Marinelli, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.

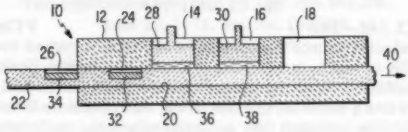
Filed Dec. 8, 1971, Ser. No. 206,056

Int. Cl. H01l 7/38; B05c 3/02

U.S. Cl. 148—171 16 Claims

One or more epitaxial layers of a semiconductor material are deposited on a substrate by providing for each epitaxial layer to be deposited a separate solution of a semiconductor material dissolved in a molten metal solvent. Each of the solu-

tions is of a small volume and a weight is provided on each solution to spread the solution out in the form of a thin layer. The substrate is brought into contact with the solution and the solution is cooled to deposit the epitaxial layer on the substrate. Since the solution is in the form of a thin layer, only a minimum of platelets of the semiconductor material are formed in the solution during the deposition of the epitaxial



layer so that the epitaxial layer has a smooth, even surface. To deposit a plurality of epitaxial layers on the substrate, the substrate is successively brought into contact with each solution which is then cooled to deposit an epitaxial layer. Each solution may be exactly saturated with the semiconductor material by bringing a body of semiconductor material into contact with the solution prior to bringing the substrate into contact with the solution.

3,753,802

TRANSISTOR

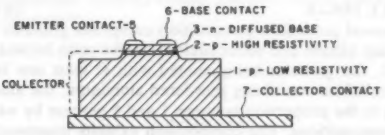
Leonard Johan Tummers, Emmasingel, Eindhoven, Netherlands, assignor to North American Philips Co., Inc., New York, N.Y.

Division of Ser. No. 84,923, Jan. 25, 1961, Pat. No. 3,217,214. This application Mar. 5, 1964, Ser. No. 349,709

Claims priority, application Netherlands, Jan. 29, 1960, 247,902

Int. Cl. H01l 7/36

U.S. Cl. 148—174 **4 Claims**



A method of making a transistor by forming a layer of high resistivity on a semiconductor collector body, diffusing a base zone into the layer to a depth less than the thickness of the layer and then forming an emitter zone in the base zone.

3,753,803

METHOD OF DIVIDING SEMICONDUCTOR LAYER INTO A PLURALITY OF ISOLATED REGIONS

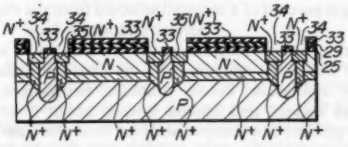
Masayoshi Nomura, Kokubunji-shi; Hiroji Saida, Hachioji-shi; Yoshio Shimura; Hisumi Sano, both of Tokyo, and Yuichi Ono, Kokubunji-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 4, 1969, Ser. No. 881,963

Claims priority, application Japan, Dec. 6, 1968, 43/88978; Aug. 25, 1969, 44/66511

Int. Cl. H01l 7/36, 7/50

U.S. Cl. 148—175 **6 Claims**



A method of isolation, comprising forming a semiconductor epitaxial layer on one surface of a semiconductor substrate, said epitaxial layer having a conductivity tape opposite to that of said semiconductor substrate, forming at least one groove in said epitaxial layer so that the groove extends to the surface of said semiconductor substrate to divide said epitaxial layer into a plurality of regions, and employing an epitaxial growth process to fill the groove with a semiconductor layer of the same conductivity type as the substrate thereby to divide said epitaxial layer into a plurality of electrically isolated regions.

3,753,804

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

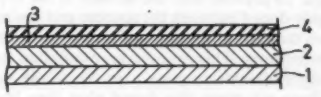
Rudolf Paulus Tijburg, and Teunis van Dongen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,646

Claims priority, application Netherlands, Sept. 8, 1970, 703226

Int. Cl. H01l 7/46

U.S. Cl. 148—177 **10 Claims**



The invention relates to a method of providing a low-resistance ohmic contact on an n-type $A^{III}B^{V}$ semiconductor body, in which a doping layer from a metal and germanium is alloyed on the body. Upon cooling after alloying not only the germanium-doped $A^{III}B^{V}$ compound separate but also germanium as such. It has been found that the contact resistance can be reduced if a donor for germanium is added to the doping layer as a result of which doped germanium is formed upon cooling after alloying.

3,753,805

METHOD OF PRODUCING PLANAR, DOUBLE-DIFFUSED SEMICONDUCTOR DEVICES

Winfried Meer, Hohenbrunn, Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Germany

Filed Feb. 19, 1968, Ser. No. 706,539

Claims priority, application Germany, Feb. 23, 1967, S108474

Int. Cl. H01l 7/02

U.S. Cl. 148—187 **3 Claims**

Described is method of producing double-diffused semiconductor devices, preferably of germanium, having at least three zones of alternately different conductance. These zones are produced by indiffusion of dopants, into the semiconductor body in accordance with the steps of the planar technique. The process is characterized by applying at least two insulating layers, which resist the diffusion temperature, to the surface of the semiconductor body prior to the diffusion. The combination of said insulating layers is so selected that they show variable masking properties with respect to the substances to be indiffused and may be comprised of a SiO_2 layer and a Si_3N_4 layer.

3,753,806

INCREASING FIELD INVERSION VOLTAGE OF METAL OXIDE ON SILICON INTEGRATED CIRCUITS

Joseph W. Adamic, Jr., Phoeniz, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

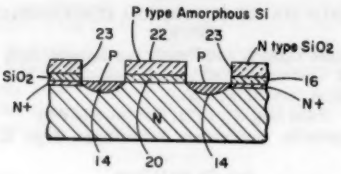
Filed Sept. 23, 1970, Ser. No. 74,634

Int. Cl. H01l 7/34

U.S. Cl. 148—188 **4 Claims**

When several metal oxide insulated gate field effect transistors are put on a doped silicon substrate and the inter-

connection leads to the transistors run along the surface of the silicon substrate, being insulated therefrom, the silicon material between the source or drain area of the substrate for one transistor and the source or drain of another transistor may act as a channel between such other sources or drains. This channel may be turned on by the voltage applied to the gate connection or lead, causing improper operation of the several



transistors. To prevent this, the surface of the doped silicon is more highly doped between the sources and drains of adjacent transistors than it is at the channel area of the substrate for the several transistors. This may be accomplished by applying a doped silicon dioxide or glass over the whole surface of the doped silicon substrate, this doped glass then being removed from the channel areas of the substrate.

3,753,807

MANUFACTURE OF BIPOLAR SEMICONDUCTOR DEVICES

Raymond Alan Hoare, and Kenneth George McQuhae, both of Ottawa, Ontario, Canada, assignors to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Feb. 24, 1972, Ser. No. 228,909
Int. Cl. H01l 7/36, 7/54
U.S. Cl. 148—188 **5 Claims**

A method of making bipolar semiconductors in which the base contact regions and the emitter region are defined by one masking step. A layer of polycrystalline silicon is formed on a substrate, the polycrystalline layer being removed at the positions for the base contact regions and the emitter produced beneath the remaining part of the layer by diffusion from the polycrystalline silicon which has been doped with a suitable emitter region dopant.

3,753,808

METHOD OF MAKING A HIGH FREQUENCY LIGHT EMITTING $GaAs_{1-x}P_x$ ($0<X<0.6$) DIODE

Yuichi Ono, Kokubuji; Masahiko Ogirima, Tokyo; Toshimitu Shinoda, Humura, and Kazuhiro Kurata, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 12, 1971, Ser. No. 114,758
Claims priority, application Japan, Feb. 12, 1970, 45/11452
Int. Cl. H01l 7/44
U.S. Cl. 148—189 **7 Claims**

A method of making a high efficiency light emitting $GaAs_{1-x}BQx$ ($0<x<0.6$) diode, wherein Zn is diffused as acce tor into an n-type crystal by using a diffusion source, whose composition lies, in a Ga-P-Zn phase diagram, in a triangular region, the three apices of which are Zn_3P_2, GaP and the point where the content in P is lowest in the region having a higher content in P among two liquid phase regions; a window through which light generated at a p-n junction formed therein can emerge from the crystal with high external quantum efficiency is thereby formed by an enrichment in P at the same time as the surface layer of an n-type $GaAs_{1-x}P_x$ ($0<x<0.6$) crystal is converted into a p-type layer.

3,753,809

METHOD FOR OBTAINING OPTIMUM PHOSPHOROUS CONCENTRATION IN SEMICONDUCTOR WAFERS

Claude E. Gaier, Pleasant Valley; Edward G. Grochowski, and Maurice M. Roy, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,632
Int. Cl. H01l 7/44
U.S. Cl. 148—189 **9 Claims**

A selected source concentration of $POCl_3$ is passed over a plurality of wafers in a furnace in a turbulent flow by positioning baffles between the source of the concentration and the wafers and a baffle on the side of the wafers remote from the source. This turbulent flow produces substantial uniformity of the phosphorous concentration in each of the wafers. By selecting the source concentration of $POCl_3$ in accordance with the flow rate, a substantially straight junction is formed in each of the wafers by the diffusion of the phosphorous into the wafers.

3,753,810

NH_4NO_3-NITROCELLULOSE COATED WITH NITROCELLULOSE AND AL

Louis Leneveu, and Frank Pierre Antoine Villey-Desmeserets, both of Pont de Buis, France, assignors to Etat Francais represente par le Ministre d'Etat Charge de la Defense Nationale-Delegation Ministerielle pour l'Armement-Direction des Pourdres

Filed Mar. 31, 1972, Ser. No. 240,299
Claims priority, application France, Apr. 6, 1971, 7112028
Int. Cl. C06b 19/02
U.S. Cl. 149—8 **16 Claims**

A novel propellant composition comprises granules of ammonium nitrate and nitrocellulose, in the ratio between 0.22 and 1, the granules being coated with at least one layer of nitrocellulose containing powdered aluminum, the aluminum being in the proportion between 1 and 5 percent by weight of the compositions. The composition exhibits improved water resistance, lower water absorbency and ignition is facilitated. According to one embodiment, nitrocellulose is replaced by polyvinyl nitrate in the proportion of up to 40 percent based on the weight of the mixture of polyvinyl nitrate and nitrocellulose.

3,753,811

IGNITER COMPOSITION

Elmo C. Julian; Frank G. Crescenzo, both of China Lake, Calif., and Robert C. Meyers, deceased, late of China Lake, Calif. (by Bette C. Meyers, executrix)

Filed June 13, 1957, Ser. No. 665,613
Int. Cl. C06c 1/00
U.S. Cl. 149—19 **2 Claims**

1. A composition consisting essentially of about 30 to about 85 weight percent of a material selected from the class consisting of polytetrafluoroethylene and polytrifluorochloroethylene; about 15 to about 70 weight percent of a material selected from the class consisting of magnesium, aluminum, boron, titanium, ziroconium, thorium, mixtures thereof and lithium nitride; about 1 to about 10 weight percent of a material selected from the class consisting of potassium dichromate, manganese dioxide, ammonium nitrate and ammonium perchlorate; and from about 1 to about 10 weight percent of a material selected from the class consisting of lead fluoride and sodium fluoride.

3,753,812

PROPELLANT COMPOSITIONS WITH HYDROXY-TERMINATED COPOLYMERS OF BUTADIENE AND FERROCENE DERIVATIVES

Mart G. Baldwin, Newtown, Pa., and Samuel F. Reed, Jr., Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army

Division of Ser. No. 886,601, Nov. 25, 1969, Pat. No. 3,718,633. This application June 28, 1971, Ser. No. 161,266

June 28, 1971, Ser. No. 161,266

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 2 Claims

The copolymers of vinyl ferrocene (VF) and butadiene are disclosed along with preparative procedures therefor. The copolymers are produced in an organic solvent when polymerization is initiated by an azo type initiator selected from the initiators consisting of azo-bis-(2-methyl-5-hydroxy-valeronitrile), azo-bis-(hydroxyethyl-2-methyl proprionate), and azo-bis-(2-methyl-3-hydroxy proprionitrile). The copolymers serve as a binder for solid propellant compositions and also serve to increase the burning rate of solid propellants wherein used.

3,753,813

DENSE PROPELLANT CONTAINING FLUOROPOLYMERS AND HEAVY METAL COMPONENT

Arthur Jack Dierolf, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 24, 1971, Ser. No. 203,109

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 3 Claims

A dense propellant composition for use in the first stage rocket engine of a multistaged missile system. The composition comprises Viton A, Teflon, mercuric oxide, and uranium-aluminum alloy.

3,753,814

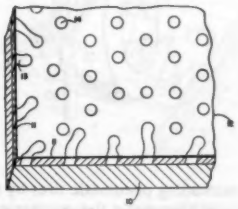
CONFINEMENT OF BUBBLE DOMAINS IN FILM-SUBSTRATE STRUCTURES

George R. Pulliam; Paul J. Besser; Jack E. Mee, and David M. Heinz, all of Orange County, Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 28, 1970, Ser. No. 101,741

Int. Cl. H01f *1/09*; H05k *3/06, 3/08*

U.S. Cl. 156—3 8 Claims



This invention described a method which controls the presence of bubble domains near the edge of a magnetic film in a film-substrate structure. The magnetic film is etched with a suitable etchant, for example boiling phosphoric acid, to provide a smooth, well-defined edge. The newly formed edge of the film repels the bubble domains therefrom thereby causing the bubble domains to be confined substantially to the center of the strip of film or to the center of the film disc.

3,753,815

METHOD AND BATH FOR TREATING TITANIUM

Albert C. Burton, Baltimore, and George C. Pierpont, Ellicott City, both of Md., assignors to Armco Steel Corporation, Middletown, Ohio

Filed Sept. 22, 1971, Ser. No. 182,847

Int. Cl. C23g *1/10*

U.S. Cl. 156—6 9 Claims

Method of treating titanium and titanium alloys, especially hot-worked products such as bar, rod, wire and various flat-rolled forms so as to remove seams, fissures and the like, as well as a desired amount of surface metal. The products are immersed in a bath comprising some 5 percent to 15 percent by volume hydrofluoric acid, with remainder phosphoric acid and water, maintained at such temperature and for such time as to remove a desired quantity of metal and yield a dull, satin-like finish free of pitting and ready for further processing. Where desired, the products may be subjected to a preliminary treatment in a molten salt bath, such as sodium hydroxide, and washed in water, this to best condition the products for metal removal.

3,753,816

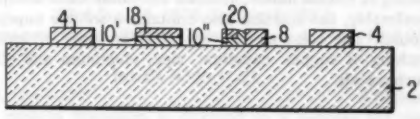
METHOD OF REPAIRING OR DEPOSITING A PATTERN OF METAL PLATED AREAS ON AN INSULATING SUBSTRATE

Nathan Feldstein, Kendall Park, and Harold Bell Law, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 200,156

Int. Cl. C23f *1/02, 17/00*

U.S. Cl. 156—11 4 Claims



The method comprises depositing a thin layer of a first metal having a relatively high degree of solubility in a particular etchant over both plated areas (if a previously deposited pattern is being repaired) and unplated areas on a substrate, this first metal being catalytic to electroless deposition of a second metal to be subsequently deposited, electrolessly depositing on the first metal either an overall pattern of areas of a second metal which has a relatively low degree of solubility in the etchant or a pattern limited to parts of a previously deposited pattern that were missing or incompletely formed, and then treating the plated areas with the etchant, where desired, so that the first metal is removed where it is not covered by the second metal but the second metal is substantially unaffected.

3,753,817

METHOD FOR PROCESSING WIRE

George N. Geissler, West New York, and Harry Clark Smith, Upper Montclair, both of N.J., assignors to Wilbur B. Driver Company, Newark, N.J.

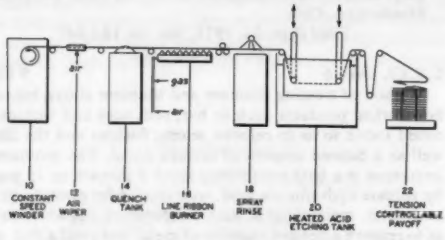
Continuation-in-part of Ser. No. 19,606, March 16, 1970, abandoned. This application July 16, 1971, Ser. No. 163,148

Int. Cl. C23f *1/04*

U.S. Cl. 156—18 4 Claims

A method for producing a heat and corrosion resistant, iron-nickel chromium-alloy wire with a roughened and ox-

idized surface by first etching the surface of the wire with an acid mixture of nitric, hydrochloric and acetic acids and



thereafter passing the wire along a flame to oxidize the surface and anneal the entire body of the wire simultaneously.

3,753,818
AMMONIACAL ETCHING SOLUTION AND METHOD UTILIZING SAME

John Gove Poor, Brunswick, Maine, and Grace F. Hsu, Rockville, Conn., assignors to Conversion Chemical Corporation, Rockville, Conn.

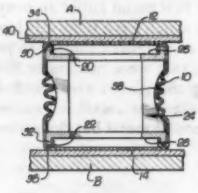
Continuation-in-part of Ser. No. 35,263, May 6, 1970, which is a continuation-in-part of Ser. No. 834,542, June 18, 1969, abandoned. This application Jan. 26, 1972, Ser. No. 221,088
Int. Cl. H05k *3/06*; **C23g** *1/18*
U.S. Cl. 156—19 **24 Claims**

An aqueous ammoniacal etching solution for metallic surfaces contains, at makeup, ammonium haloacetate, ammonium hydroxide, and a promoter selected from the group consisting of soluble iodide, bromide and noble metal compounds; preferably, the solution also contains a soluble cupric compound. The solution may be used for spray or immersion etching of copper, cadmium, zinc, aluminum and alloys of such metals.

3,753,819
METHOD OF MAKING TUBULAR FLEXIBLE BAG WITH LAP WELDED ENDS

Carlos A. Mollura, 2824 Del Oro Ln., Fullerton, Calif.

Filed Aug. 9, 1971, Ser. No. 170,209
Int. Cl. B29d *23/10*
U.S. Cl. 156—69 **8 Claims**

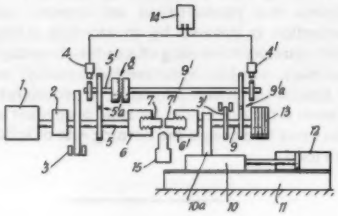


A length of plastic material is rolled to form a tube, the ends being lapped and partially welded to leave an access opening to the inside of the bag. The bag is then telescoped over welding die or form having the general configuration of the tube, but axially compressed. The tube is then accordion folded about the thin form so that the ends of the tube can be wrapped around peripheral rims of the form. End pieces are then welded in place, the form is removed through the access opening and the partially welded lap joint forming the access opening is sealed.

3,753,820
METHOD AND APPARATUS OF FRICTION WELDING TWO ROTATING BODIES IN A PREDETERMINED RELATIVE ROTATIONAL RELATION

Yuji Ishikawa, Nagoya, and Mitsuhiro Numata, Anjo, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1971, Ser. No. 144,598
Claims priority, application Japan, May 27, 1970, 45/44846
Int. Cl. B29c *27/08*; **B32k** *27/00*
U.S. Cl. 156—73 **12 Claims**

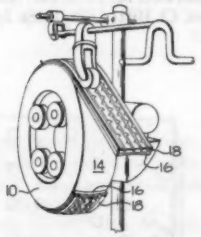


The invention is a method of and apparatus for rotational position-setting friction welding, in which two bodies to be welded together are pressed together and the one member is rotated relative to the other member to generate heat by friction. The rate of relative rotation of the two bodies is then reduced to a predetermined value and when this predetermined value is reached the two bodies are brought into a predetermined relative rotational relationship and welded together.

3,753,821
METHOD OF RETREADING PNEUMATIC TIRES WITHOUT A MOLD

Bradley E. Ragen, Spruce Pine, N.C., assignor to Brad Ragan, Inc., Spruce Pine, N.C.

Filed Feb. 1, 1971, Ser. No. 111,461
Int. Cl. B29h *5/04*, *17/36*
U.S. Cl. 156—96 **5 Claims**



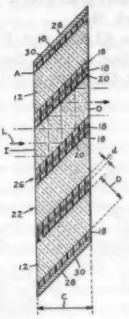
Method of retreading pneumatic tires by the application to a previously used pneumatic tire carcass of a cured rubber tread band wherein proper adhesion of tread band to the previously used tire carcass is facilitated by use of an uncured rubber strip of predetermined cross-sectional configuration concave to fit the carcass. The tread is applied to a relaxed carcass and its length is preselected as less than the circumference so that on vulcanizing at the same temperature as the shrink temperature of the carcass (about 200°F), the tread will just surround the carcass. The composition of the uncured strip is selected to vulcanize at this same temperature.

3,753,822

METHOD OF MAKING A MULTI-LAYER OPTICAL ISOLATION

Philip L. Heinrich, Fairfield, Conn., assignor to Laser Optics, Inc., Danbury, Conn.

Filed Mar. 25, 1971, Ser. No. 128,354
Int. Cl. B32b 17/00
U.S. Cl. 156—101 3 Claims



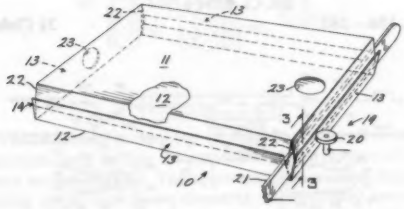
An optical reflector structure, with broad band rejection characteristics, for isolating a particular band of wavelengths of interest. The optical reflector comprises a stack of flat substrates, each one of which has a coating, which is reflective at the bandwidth of interest, disposed along at least one of its faces. The optical reflector structure is interposed into a beam of light with the planes of the coatings at a predetermined angle to the beam of light. In one embodiment the predetermined angle is 45°. The bandwidth of interest is reflected by a first set of the coatings to another set of coatings while the remaining light is absorbed by the substrates or opaque coatings on the substrates in one embodiment or by a coating of light-absorbing material disposed behind the reflective coating relative to the incident light in another embodiment.

3,753,823

METHOD OF MANUFACTURING A WATER MATTRESS

Ralph L. Kuss, Findlay, Ohio, assignor to R. L. Kuss & Co., Inc., Findlay, Ohio

Filed Mar. 2, 1972, Ser. No. 231,289
Int. Cl. B31f 7/00
U.S. Cl. 156—145 4 Claims



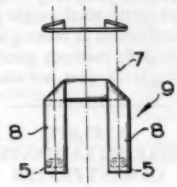
A method of manufacturing a water filled mattress is disclosed. A vinyl chloride sheet is pattern cut to a desired configuration, folded upon itself to form an envelope having top and bottom layers and one integral continuous sidewall, and sealed around overlapping adjoining edges of the layers on three sides. The resulting lapped seams form a water-tight integral sidewall on the envelope. The new method of construction includes steps for electrically welding the lapped seams and electrically bonding sealable air outlet and water inlet fittings in the surface of the envelope.

3,753,824

PROCESS OF MANUFACTURING CARRYING BAGS WHICH COMPRISE U-SHAPED CARRYING HANDLES OF PLASTICS MATERIAL SHEETING

Frank Bosse, Ibbenburen-Dorenthe, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

Filed Mar. 12, 1971, Ser. No. 123,580
Claims priority, application Germany, Mar. 13, 1970, P 20 12 084.7; Nov. 4, 1970, P 20 54 277.2
Int. Cl. B31f 1/08
U.S. Cl. 156—227 5 Claims



The end portions of the strip are first folded toward the center of the strip during the folding of the carrying handle. The folded strip end portions are then engaged and rotated through 90° in mutually opposite senses about respective axes, which are spaced apart by the desired distance between the center lines of the legs of the carrying handles.

3,753,825

PROCESS FOR THE PRODUCTION OF SHEETS OF CELLULOSE NITRATE OR CELLULOSE ACETATE

Harald Stock, Oberpleis, Germany, assignor to Dynamit Novel AG, Troisdorf, Germany

Filed Jan. 28, 1970, Ser. No. 6,402
Claims priority, application Germany, Feb. 4, 1969, P 19 05 293.8
Int. Cl. B32b 31/12
U.S. Cl. 156—277 8 Claims

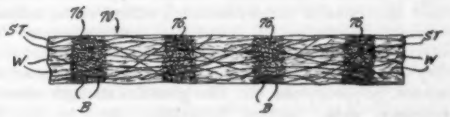
The present invention is directed to a process for the production of sheets of cellulose nitrate or cellulose acetate with sharply defined, differently colored zones which comprises producing a sheet of said material according to the "block method" utilizing pressures and heat, desicating and pressing said sheet and treating the desired zones of the sheet surface with a printing process, thereby applying the desired coloring material to said sheet, said coloring material containing a binder of the same material from which the sheet is produced.

3,753,826

METHODS OF MAKING NONWOVEN TEXTILE FABRICS

Charles H. Plummer, Princeton, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 17, 1971, Ser. No. 125,239
Int. Cl. B32b 31/12
U.S. Cl. 156—277 10 Claims



A nonwoven textile fabric having excellent softness, drape, and hand, good long and cross tensile strength, good wet abrasion resistance and good washability, and good absorptive

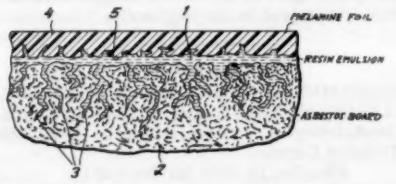
capacity and opacity comprising: a relatively flat, sheet-like fibrous structure of from about 30 percent by weight to about 90 percent by weight of overlapping and intersecting structural fibers having an average length of from about ¼ inch to about 1¼ inches or more, and from about 70 percent by weight to about 10 percent by weight of relatively short fibers having an average length of from about 1/6 inch to about 1/25 inch or less; said structural fibers being bonded together by a closely-spaced, non-migrating, intermittent print pattern of discrete synthetic resin binder areas, and said relatively short fibers being bonded together by a substantially uniform, overall application of a relatively soft, synthetic resin binder in an amount of from about 2 percent by weight to about 10 percent by weight, based on the total weight of the finished nonwoven textile fabric. Methods of making such nonwoven textile fabrics, and particularly methods involving the use of wet-forming manufacturing techniques, are also included.

3,753,827

METHOD OF MAKING LAMINATED ASBESTOS CEMENT PLATES

Harald Kober, Wanne-Eickel, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany

Filed May 14, 1971, Ser. No. 143,569
Int. Cl. C09j *5/02*; B32b *13/04*
U.S. Cl. 156—307 **4 Claims**



An asbestos-cement plate or sheet is coated with a resorcinol/formaldehyde dispersion or emulsion which is precondensed in and on the asbestos plate. A melamine/aldehyde foil is then applied and bonded under heat and pressure to the substrate.

3,753,828

METHOD OF PREPARING OXYGEN IMPERMEABLE FILM LAMINATE

Stanley Manne, South Holland, and Myron S. Beyer, Danville, both of Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Division of Ser. No. 731,563, May 23, 1968, Pat. No. 3,622,439, Continuation-in-part of Ser. No. 658,764, Aug. 7, 1967. This application June 11, 1971, Ser. No. 152,361
Int. Cl. C09j *3/14*
U.S. Cl. 156—333 **3 Claims**

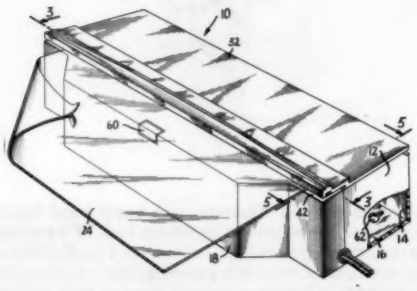
Impermeable plastic film laminates for use in the packaging of food products and other materials are formed by an improved method in whether polyethylene or other plastic films are laminated to plastic films such as nylon, polyester, cellophane, polypropylene, polyethylene, polyvinyl chloride, etc., by adhesive lamination with an oxygen and moisture vapor impermeable saran-containing adhesive, the adhesive preferably including a polymeric polyisocyanate. The polyethylene portion of the laminate provides for heat sealability of the resulting film laminate. The nylon, polyester, cellophane, polypropylene, etc., film gives flex strength, abrasion resistance, gloss, vacuum formability, etc., to the film laminate. The saran adhesive gives an impermeable film laminate upon curing. In the manufacture of the film laminate, a pressure sensitive but curable saran adhesive is applied to one of the plies of the film laminate on an ordinary plastic film coater or printing press and the two films combined and rolled up on a windup reel. The pressure applied to the film laminate in the windup reel is the laminating force applied to the film and the film laminate is cured simply by being stored under pressure of being wound on the rolls. After curing of the saran adhesive, the plastic film plies cannot be easily separated.

3,753,829

PLASTIC BAG FABRICATING, DISPENSING AND SEALING UNIT

Max Freeman, Great Neck, N.Y.

Continuation of Ser. No. 82,621, Oct. 21, 1970, abandoned. This application Dec. 6, 1971, Ser. No. 205,110
Int. Cl. B32b *31/20*
U.S. Cl. 156—367 **17 Claims**



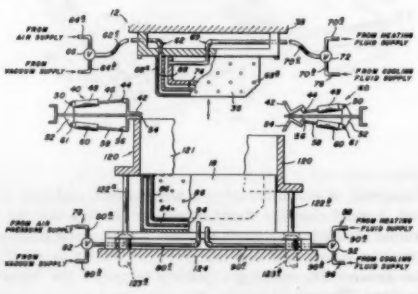
A plastic bag fabricating, dispensing and sealing unit includes a housing formed with a compartment and closed with a hinged lid that receives a cartridge containing a roll of double-layered folded plastic film open at one side. A wire mounted on the housing extends along an insulating strip. A circuit to heat the wire is energized by closing and pressing the lid against the housing. An insulating strip on the lid presses the plastic film against the heated wire, thereby severing and sealing and layers of plastic film to form a bag. After filling the bag, the remaining opening therein can be sealed by inserting it between the housing and lid and closing and pressing the lid against the housing.

3,753,830

APPARATUS FOR LAMINATING A PLASTIC SHEET ONTO A SURFACE OF A HOLLOW BODY

Ira G. Cruckshank, Rolling Meadows, and Thomas J. Snodgrass, Lake Forest, both of Ill., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed July 13, 1970, Ser. No. 54,533
Int. Cl. B29c *17/04*
U.S. Cl. 156—382 **31 Claims**



Apparatus for and a method of laminating a plastic sheet onto a surface of a hollow body are disclosed. The apparatus has a frame, a male die mounted on the frame, a female die

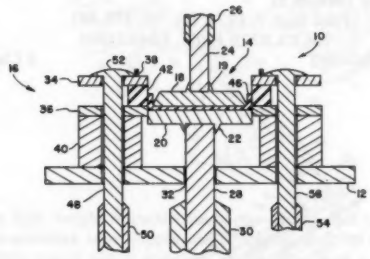
mounted on the frame in registry with the male die and in spaced relation to the male die, the female die being adapted to receive the hollow body. Clamping means are operable to receive the plastic sheet and to clamp the plastic sheet in position for the thermoforming operation. Heating means are adjacent to the clamping means for heating the clamped plastic sheet to its softening temperature. The clamping means is first movable with the clamped plastic sheet into the heating means so that the plastic sheet is heated to its softening temperature. The clamping means is then movable with the clamped heated sheet into registry with the male die and the female die. Sealing means are on one of the male die and the female die for sealing against one member of the clamping means and the clamped heated plastic sheet and to define therewith a sealed chamber. The male die has a first vacuum and fluid pressurizing means for applying vacuum and fluid pressure to the male die. A first drive means is connected to the male die for reciprocating the male die toward and away from the female die. The first drive means is operable to move the male die toward the clamped heated sheet and to form the clamped heated sheet about the male die. The first drive means is then operable to move the male die and the clamped formed heated sheet into the hollow body in the female die, and the first vacuum and fluid pressurizing means is operable to apply fluid pressure against the clamped formed heated sheet to apply the clamped formed heated sheet to the surface of the hollow body.

3,753,831

FOLDING APPARATUS

Alton R. Copithorne, Rowley, Mass., assignor to Boston Machine Works Company, Lynn, Mass.

Filed Aug. 28, 1970, Ser. No. 67,773
Int. Cl. B32b *3/04*
U.S. Cl. 156—479 **4 Claims**



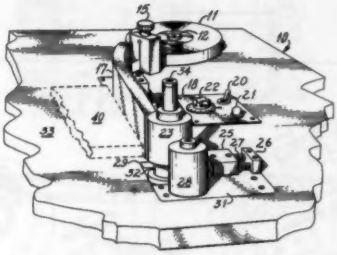
The invention is directed to an apparatus and method for simultaneously folding the entire peripheral portion of a workpiece or part thereof. The apparatus comprises a shaping die having upper and lower elements, an elastomer sandwiched between the upper and lower elements, a press having upper and lower die members, and means for actuating the shaping die and press. The die elements and elastomer are formed with an internal hole which is adapted for reception of the upper and lower die members. The profiles of the die members conform substantially to the aperture profile of the internal hole and are in registration therewith. When the upper and lower elements are urged toward each other, the elastomer is compressed and bulges into the internal hole and engages the peripheral portion of the workpiece, whereby the entire margin of the workpiece or any portion thereof as desired is folded simultaneously.

3,753,832

EDGE BANDING MACHINE

Lee E. Veneziale, Jr., Tyrone, Pa., assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,455
Int. Cl. B32b *31/20, 31/18*
U.S. Cl. 156—499 **6 Claims**



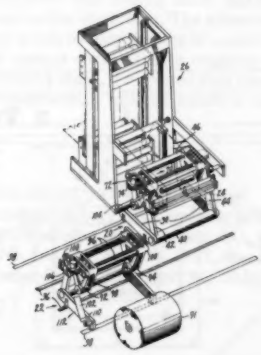
Apparatus and method is disclosed for applying a continuous edge band to a panel of woody material which comprises a plurality of elements strategically mounted on a smooth, flat working surface including a bracket for guiding the edge banding material to a heated, curved platen or heating bar, a resiliently mounted pressure roller containing a grooved guide slot in the face surface thereof, and a finishing roller each mounted in sequence.

3,753,833

WEB SUPPLY APPARATUS

Kirk W. Bassett, Paxton, and Richard A. Butler, Jr., Brookline, both of Mass., assignors to Butler Automatic, Inc., Canton, Mass.

Filed Feb. 16, 1970, Ser. No. 11,654
Int. Cl. B32b *31/08*; B65h *19/16*
U.S. Cl. 156—504 **16 Claims**



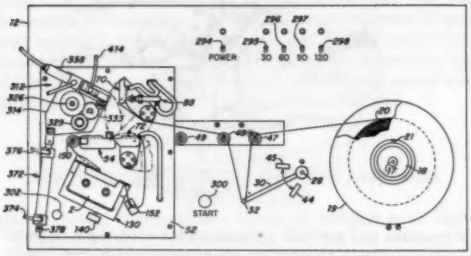
The invention relates to web supply apparatus of the type wherein web is unwound alternately from each of two similar mobile roll stands each movable in the direction of its web roll axis between an unwind position usually in line with a web consuming machine and a loading position laterally offset from the path of the web. The two roll stands generally move on floor supported tracks between their loading and unwind positions and each is equipped with a portion of a web splicing device so constructed that, in the loading position a ready web roll having been picked up from the floor has its leading end so prepared and mounted that when the ready roll stand is moved to the unwind position, the ready web may be spliced automatically to the trailing end of the running web by the co-action of the two splicer halves mounted on the unwinding and ready roll stands.

3,753,834

APPARATUS FOR SPLICING MAGNETIC TAPE

James L. King, Sudbury, Mass., assignor to King Instruments, Corp., Hudson, Mass.

Division of Ser. No. 9,552, Feb. 9, 1970, Pat. No. 3,637,153.
This application Apr. 28, 1971, Ser. No. 138,204
Int. Cl. B31f 5/06; B65h 19/20
U.S. Cl. 156—506 14 Claims



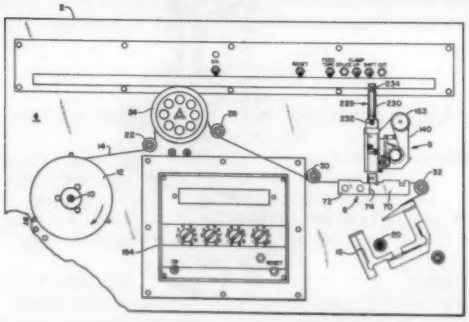
Apparatus for splicing magnetic tape comprising a stationary splicing block and two moveable splicing blocks, said splicing blocks each having a surface for supporting tape, and means for moving said two movable splicing blocks alternately into and out of selected positions in which their said surfaces are contiguous with the said surface of the stationary block.

3,753,835

SPLICING TAPE DISPENSER-APPLICATOR

James L. King, Sudbury, Mass., assignor to King Instrument Corporation, Waltham, Mass.

Filed June 21, 1971, Ser. No. 155,023
Int. Cl. B31f 5/00; B26d 5/20
U.S. Cl. 156—506 17 Claims



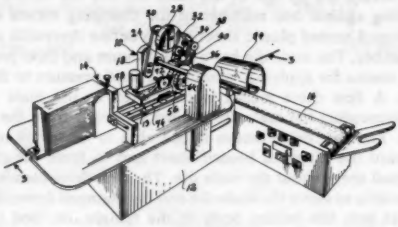
The invention is a mechanism for dispensing and applying adhesive-coated splicing tape. The mechanism is particularly useful in a machine for splicing magnetic tapes and winding magnetic tapes into cassettes. The invention comprises a carriage that supports a supply spool for splicing tape, feeding means for pulling splicing tape off of the supply spool and advancing it along a predetermined path, means for reciprocating the carriage vertically toward and away from a splicing station, means for indexing the feeding means so as to advance a selected amount of tape when the carriage is moving away from the splicing station, and means for severing a piece from the leading end of the splicing tape and pressing it against tapes to be spliced located at the splicing station.

3,753,836

STAMP APPLYING HEAD

Ronald J. Buckholz, Bay Shore, N.Y., assignor to Designed Mailing Accessories, Inc., Bay Shore, N.Y.

Continuation-in-part of Ser. No. 25,951, April 6, 1970, abandoned, and a continuation-in-part of Ser. No. 58,543, July 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 729,336, May 15, 1968, abandoned. This application Aug. 10, 1971, Ser. No. 170,485
Int. Cl. B65c 9/14, 9/18, 9/22
U.S. Cl. 156—521 15 Claims



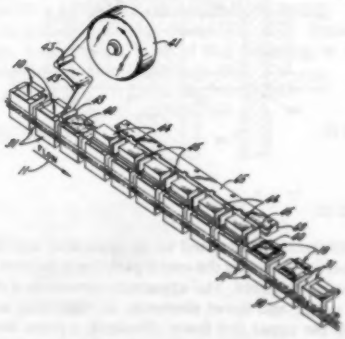
For high-speed application of postage stamps to letters, a spindle to hold the roll of postage stamps, guide rollers to guide a strip of stamps from the roller, a slitter to cut each stamp individually at its perforations from the strip and vacuum means for securing the loose stamp, moistening or applying glue to the stamp and securing the stamp to a moving mail piece. The vacuum means includes a vacuum wheel having a vacuum port at its circumference and connecting holes leading to the side of the vacuum wheel, a non-rotating valve plate against the side of the vacuum wheel alternately admitting and blocking vacuum to the vacuum port and a source of constant vacuum.

3,753,837

PACKAGING MACHINE FOR SEALING FLEXIBLE TAPE TO CARTONS

Robert F. Lense, Rockford, Ill., assignor to Rexham Corporation, New York, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,301
Int. Cl. B32b 31/04; E04b 2/00
U.S. Cl. 156—552 4 Claims

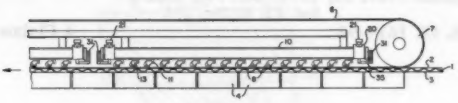


A flexible tape is sealed to the outfolded flaps of a carton while the latter is being supported in a holder and advanced along a predetermined path. The holder is formed with a relieved depression to enable vertical deflection of a raised portion of one of the dust flaps during sealing and thereby make the inner surface of such flap flat and planar so as to effect a better seal between the flap and the tape. A bar sustains part of the sealing thrust exerted on the carton holder and carries a flexible leaf spring which yieldably backs and supports one of the side flaps during sealing.

3,753,838
APPARATUS FOR PRODUCING DOUBLE FACED CORRUGATED PAPERBOARD

Helmut Brandenburg, Wuppertal-Ronsdorf, Germany, assignor to Gebr. Eickhoff, Maschinenfabrik Und Eisengiesserei m.b.H., Bochum, Germany

Filed Feb. 17, 1972, Ser. No. 227,120
Claims priority, application Germany, Feb. 22, 1971, P 21 08 378.3
Int. Cl. B31f 1/20
U.S. Cl. 156—555 9 Claims

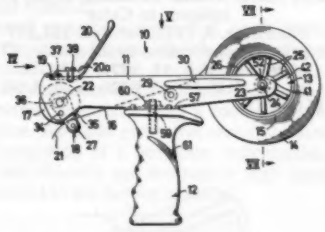


Apparatus in which a flat paper facing sheet is glued to a traveling corrugated paper sheet is provided with an endless traveling belt, the lower strand of which rests on an upper facing sheet. Resting on this lower strand of the belt is a plurality of weighting rolls arranged in rows extending lengthwise of the belt. Above each row of rolls there is a beam to which the rolls are pivotally connected. Each beam is adjustable vertically independently of the others in order to adjust the pressure of the rolls against the belt. The beams are prevented from moving lengthwise.

3,753,839
CARTON TAPING TOOL

Reiner Funke, Cologne-Bayenthal, and Franz Faust, Porz, both of Germany

Filed Sept. 28, 1970, Ser. No. 76,016
Claims priority, application Germany, Oct. 11, 1969, P 19 51 339.4; Jan. 31, 1970, G 70 03 341.9
Int. Cl. B32b 31/18, 31/20
U.S. Cl. 156—577 34 Claims



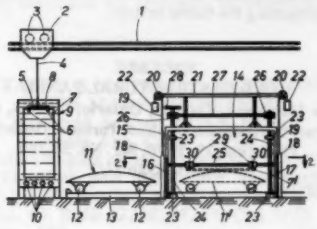
A light weight manual type carton-taping tool with a pressure-sensitive tape supply roll-receiving drum at one end; a middle region piston grip; and, at the other end, a tape application guide and pressing roller and a small rotatable tape control roller between which the tape is led, the control roller mounted swingably to and from the pressing roller and provided with an over-running type clutch allowing forward tape feed and preventing tape retraction. A tape cutter blade is clamped roughly diametrically opposite the control roller by a leaf spring type resilient tape-end-wiping finger.

3,753,840
FABRICATION OF CURVED GLASS SHEETS

Emile Plumat, Gilly, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium

Filed Jan. 19, 1971, Ser. No. 107,723
Claims priority, application Great Britain, Jan. 19, 1970, 2,445/70
Int. Cl. C03b 23/02
U.S. Cl. 161—1 15 Claims

A process for bending glass sheets to form permanently curved sheets by subjecting the sheets to a surfacing treatment which removes a layer from at least one surface of the sheet and thus removes or reduced pre-existing surface defects, the

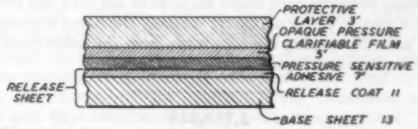


surfacing treatment at least beginning before commencement of the bending operation.

3,753,841
PRESSURE RECORDING SHEET

Seth Wheeler, Clark Summit, Pa., assignor to Litton Business Systems, Inc., New York, N.Y.

Continuation of Ser. No. 27,915, April 13, 1970, abandoned.
This application May 9, 1972, Ser. No. 251,847
Int. Cl. B41m 5/16; B32b 7/06
U.S. Cl. 161—6 1 Claim

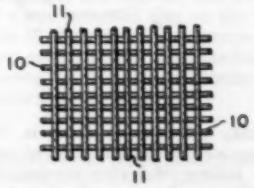


Stock comprising a pressure recording sheet including a protective transparent overlay sheet, an opaque pressure clarifiable coating under said overlay sheet, and a base sheet adhesively secured to the blush coat. The adhesive for securing the base sheet to the overlay sheet is of a color contrasting with the color of opaque coat so that in response to localized pressure on the overlay sheet, the opaque coat transparentizes and reveals the contrastingly colored adhesive to produce a record.

3,753,842
NON-WOVEN TEXTILE FABRIC

E. Henry Pittman, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

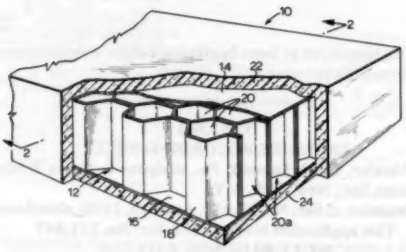
Division of Ser. No. 648,597, June 26, 1967, abandoned. This application Sept. 9, 1970, Ser. No. 70,664
Int. Cl. B32b 5/12
U.S. Cl. 161—57 7 Claims



A non-woven textile fabric comprising a plurality of warp yarns and a plurality of fill yarns, said yarns being fibrous or filament yarns, preferably arranged in an oriented pattern and bonded together at their crossing points by an adhesive com-

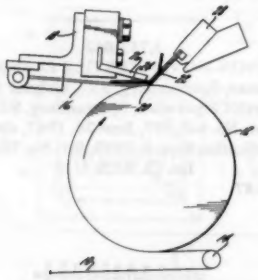
position comprising the combination of a vinyl acetate polymer and a styrene-maleic anhydride copolymer. The adhesive composition is applied to the yarns or the fabric preferably as an aqueous emulsion, and the bond is effected by drying or subjecting the fabric to heat.

3,753,843
MOLDED STRUCTURAL PANEL
David John Hutchison, Toronto, Ontario, Canada, assignor to Monostruct Corporation Limited, Toronto, Ontario, Canada
Filed June 29, 1970, Ser. No. 50,787
Int. Cl. B32b *3/12*
U.S. Cl. 161—43 4 Claims



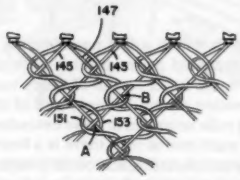
A panel comprises an essentially multi-cellular core and a seamless covering over major surfaces of the core and over at least a portion of the periphery thereof. The panel is produced in a mold by spacing the core away from the mold faces and molding the covering material around the core.

3,753,844
COMPRESSIVELY DEFORMED CELLULOSIC LAMINATES WITH IMPROVED DRAPE, BULK, AND SOFTNESS
Ralph V. Braun, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed May 20, 1971, Ser. No. 145,210
Int. Cl. B32b *5/12*
U.S. Cl. 161—57 12 Claims



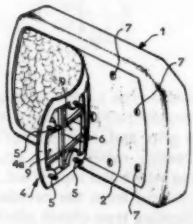
A soft, bulky cellulosic laminate is illustrated. The laminate comprises an airlaid web of cellulosic fibers containing a pattern of highly compacted spot-bonded areas and fluffy mound regions of substantially unbonded fibers disposed between the bonded areas. The cellulosic web is united to a network of reinforcing elements, such as a scrim, drafted fiber web, or continuous filament web, with a layer of patterned adhesive containing open areas of a magnitude at least several times greater than the spacings between the spot bond areas in the cellulosic web. The laminate is compressively deformed, such as by microcreping, to enhance softness and bulkiness by accentuating the unbonded and fluffy characteristics of the mounds in the cellulosic webs which are disposed within the opened areas of the adhesive layer.

3,753,845
NET STRUCTURES
Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Continuation-in-part of application Ser. No. 849,947, Aug. 12, 1969, now Patent No. 3,591,894. This application Nov. 18, 1970, Ser. No. 90,698
Int. Cl. B32b *7/08*
U.S. Cl. 161—92 4 Claims



A net-like structure formed of strands and having strand junctions at each of which strands are disposed in crossing relationship with each other and are entwined by other strands.

3,753,846
CUSHIONING AND COVERING MEANS FOR PORTABLE ELECTRICAL DEVICES
Maurice Marie Achille Trouilhet, Lyon, France, assignor to Calor
Filed Mar. 9, 1971, Ser. No. 122,377
Claims priority, application France, Mar. 17, 1970, 7009540; Feb. 12, 1971, 7104788
Int. Cl. F16f *15/12*; B32b *3/26, 3/30*
U.S. Cl. 161—111 4 Claims



The present invention essentially relates to an improved covering and cushioning means in particular for small electric hand-apparatus, of the type comprising at least one plastic plate applied on the wall of the said apparatus, said plate being provided on its inner face with a plurality of pins adapted to be inserted into corresponding holes provided in the said wall and which pins protrude beyond the other side of said wall and are headed or flattened in rivet-like manner on the other side of the said wall so said means will be held in position on the said wall.

3,753,847

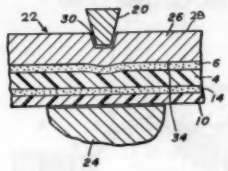
LAMINATED CONTAINER WALL STRUCTURE

Herbert Gayner, Monroeville, Pa., and John N. Demsey, Jr., Oakland, Calif., assignors to Aluminum Company of America, Pittsburgh, Pa.

Original application May 16, 1969, Ser. No. 825,164, now Patent No. 3,632,461. Divided and this application Jan. 7, 1971, Ser. No. 104,677

Int. Cl. B32b *27/36, 27/38, 27/30*

U.S. Cl. 161—116 5 Claims



A method of manufacturing a laminated metal container wall having an integral opening device. Providing a metal sheet, coating the sheet with an adhesive selected from the group consisting of epoxy, polyester and polyurethane and subsequently securing to the sheet by means of the adhesive a continuous layer of barrier material selected from the group consisting of low density polyethylene, high density polyethylene and cast polypropylene. Subsequently scoring said sheet to define a severable and/or removable sector and leaving residual metal along the score line of a thickness of about 0.002 to 0.006 inch. Simultaneously with the scoring operation reducing the thickness of the barrier material in the regions underlying the scoring through compressibly established flow without penetrating entirely through the layer. An outer protective material selected from the group consisting of a polyester, polyvinylidene chloride, polyvinyl chloride and medium or high density polyethylene may be continuously secured to the barrier material.

A laminated metal container wall made by the above method having a barrier material thickness of about 0.002 to 0.003 inch in the portion not underlying the score line and a reduced thickness in the portion underlying the score line. The barrier material having a continuous panel covering structure. An outer protective material selected from the group consisting of a polyester, polyvinylidene chloride, polyvinyl chloride and medium or high density polyethylene secured to the barrier material.

3,753,848

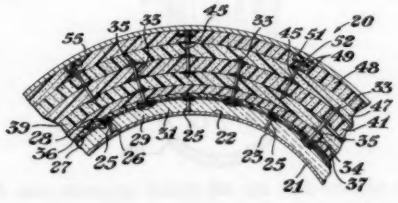
INSULATION INSTALLATION

Robert B. Bennett, Westerville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed June 23, 1971, Ser. No. 155,893

Int. Cl. B32b *3/00*

U.S. Cl. 161—120 15 Claims



Curved surfaces are insulated with slabs, boards or planks of light weight insulating material by providing a plurality of outwardly projecting studs on the surface to be insulated, affixing to the studs a sheet member affixing to the sheet member second studs displaced from the first studs, impaling a plurality of insulating elements on the second studs. A convenient means is provided for installing thermal insulation on regularly or irregularly curved surfaces.

3,753,849

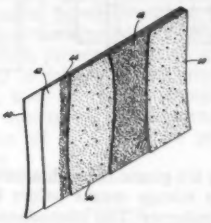
CEMENTATIOUS MATERIAL AND CONSTRUCTIONS MADE THEREFROM

Raymond A. Duff, 1333 S. Baker, Santa Ana, Calif. 92707

Continuation-in-part of application Ser. No. 851,960, Aug. 21, 1969, now abandoned. This application Mar. 11, 1971, Ser. No. 123,221

Int. Cl. B32b *17/10, 27/38;* C04 *7/12*

U.S. Cl. 161—162 18 Claims



A cementatious material of construction comprised of an admixture of hydraulic cement, aggregate, epoxy resin, water reducing additive, and sufficient water to harden the cement. Also disclosed are reinforced concrete constructions formed of alternate integrally bonded layers of the cementatious material and fiber-reinforced epoxy resin, and a method for manufacturing laminated concrete and fiber-reinforced epoxy resin constructions. The constructions can have a resinous surface coating integrally bonded thereto to enhance the appearance and serviceability of the construction.

3,753,850

GOLD TOOLING PROCESS AND LAMINATE THEREFOR

Jacques Brunet, Lyon, France, assignor to La Cellophane, Paris, France

No Drawing. Filed Mar. 14, 1972, Ser. No. 234,680

Claims priority, application France, May 6, 1971, 7116329

Int. Cl. B32b *7/06, 31/20;* B44c *1/16*

U.S. Cl. 161—214 11 Claims

A process for transferring metals by a tooling method which comprises placing a metal-coated laminate on a substrate to be decorated, this metal laminate comprising a temporary support, a non-adherent and protective layer on the support, the layer comprising a polyester having a melting point below 150° C. formed by the polycondensation of saturated linear dicarboxylic acids and alkylene diols having from 2–6 carbon atoms, a thin film of a decorative metal on this non-adherent and protective layer and a layer of a heat-activated glue on the metal; transferring a portion of this metal layer corresponding to the pattern on a heat-setting iron to the substrate to be decorated and removing the metal-coated laminate leaving a metal tooled pattern on the substrate.

3,753,851

METHOD FOR TREATING PULP DIGESTER BLOW GASES

Charles S. Gaillard, New York, N.Y., assignor to Westvaco Corporation, New York, N.Y.

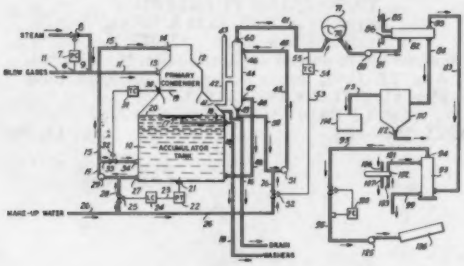
Filed Oct. 22, 1971, Ser. No. 191,728

Int. Cl. D21c *11/08*

U.S. Cl. 162—15 5 Claims

Disclosed is a process for treating hot, odoriferous blow gases from a pulp digester whereby a significant portion

of the available heat is recovered, turpentine is recovered, a portion of the odoriferous gases are removed and recovered and the remaining gases are burned resulting in further heat recovery. The digester blow gases containing water vapor, turpentine vapor and gaseous odoriferous sulphur compounds are passed through a series of direct condensers to a gas storage means before being conducted to an indirect condenser. The uncondensed gases leaving the indirect condenser are scrubbed while the condensate mixture leaving the indirect condensor is conducted to a turpentine separating means.

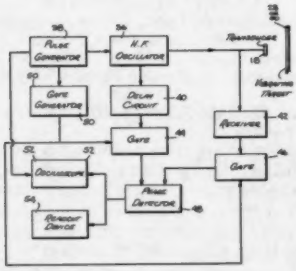


3,753,852

ULTRASONIC SYSTEM FOR MONITORING VIBRATIONS IN A NUCLEAR REACTOR

Clyde C. Scott, 31043 Pierce Drive, Birmingham, Mich. 48009, and James P. Lagowski, 1755 Beverly Blvd., Berkeley, Mich. 48072

Filed Dec. 10, 1971, Ser. No. 206,811
Int. Cl. G21c *17/00, 17/06;* G01n *9/24*
U.S. Cl. 176—19 R 5 Claims



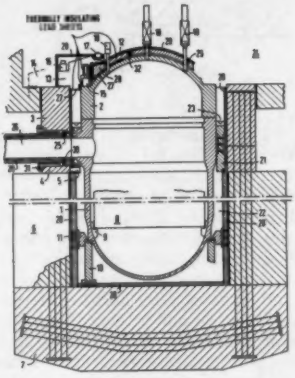
Apparatus for detecting the frequency and amplitude of vibration of a preselected vibrating member inside a nuclear reactor vessel from an external point including a transducer mounted on the outside of the vessel for transmitting a signal to said member and receiving an echo back from the vibrating member, a pulse generator for generating repetitive pulses, a high-frequency oscillator triggered by the pulse generator, the transducer being excited by the high-frequency pulses for transmitting the signal, a delay circuit having a time delay equivalent to the time interval for ultrasonic pulses travelling between the transducer and the operating member, a phase detector, a gate circuit synchronized with the pulse generator for feeding the delayed transmitting pulses and the corresponding receiving echoes simultaneously to the phase detector, and read-out means for the frequency and amplitude of vibration of the vibrating member.

3,753,853

SAFETY DEVICE FOR PRESSURE VESSELS ESPECIALLY FOR NUCLEAR REACTORS

Hans-Peter Schabert, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 24, 1970, Ser. No. 74,988
Claims priority, application Germany, Sept. 25, 1969, P 19 48 522.4
Int. Cl. G21c *13/00*
U.S. Cl. 176—38 11 Claims



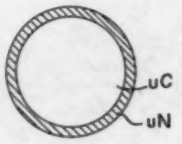
Safety device for pressure vessel having a cover to which tubes are secured includes a capture cover disposed on the outside of the pressure vessel cover, the capture cover becoming effective for covering the pressure vessel pursuant to rupture of the pressure vessel cover, the capture cover being formed with openings through which the tubes secured to the pressure vessel cover extend and being removable from the pressure vessel together with the pressure vessel cover.

3,753,854

PRODUCTION OF A FUEL CARBIDE WITH A JACKET OF FUEL NITRIDE, SULFIDE OR PHOSPHIDE

Horst Axel Karl Krauth, Wurzburg, Norbert Müller, Wolfgang, near Hanau am Main, and Paul Himmelstein, Frankfurt am Main, Germany, assignors to Nukem Nuklear-Chemie und-Metallurgie, G.m.b.H., Wolfgang near Hanau, Germany

Filed June 15, 1970, Ser. No. 46,171
Int. Cl. G21c *3/02, 21/00*
U.S. Cl. 176—67 8 Claims



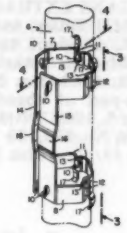
Nuclear fuel particles are prepared by forming a jacket of 1 to 10 μm thick of uranium, plutonium or thorium nitride, sulfide or phosphide on fuel carbide particles having a size between 0.01 and 2 mm.

3,753,855

MODULAR FUEL ROD SPACER ASSEMBLY FOR NUCLEAR REACTOR FUEL ASSEMBLIES

Harry A. Donck, New York, N.Y., assignor to United Nuclear Corporation, Elmsford, N.Y.

Filed June 15, 1970, Ser. No. 46,234
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 9 Claims



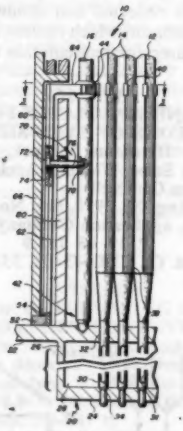
A fuel rod spacer assembly comprises a cellular spacer array and, for each fuel rod, a bearing clip comprising a pair of linked split ring rod embracing portions proportioned to extend around substantially more than 180° of the rod circumference. A pair of spring tabs on the split rings are provided for releasably engaging the cellular spacing array in order to prevent longitudinal displacement of the bearing clip. This spacer assembly can be easily fabricated because the bearing clips need not be formed as a part of the cellular array. The fuel rods can be transversely loaded into the bearing clips and longitudinally loaded into the cellular array without contact against tight, previously-fixed spacers.

3,753,856

CORE CLAMPING SYSTEM FOR A NUCLEAR REACTOR

Edward B. Ash, Canoga Park, Calif., assignor to Rockwell International Corporation

Filed June 1, 1970, Ser. No. 42,362
Int. Cl. G21c *13/04*
U.S. Cl. 176—87 3 Claims



A core clamping system for use with nuclear reactors wherein bimetallic elements are placed around a core so that at high temperature and flux conditions they act to exert an inwardly directed clamping force on a predetermined clamping plane thereby counteracting the tendency for the core to expand under those conditions and maintaining constant core geometry.

3,753,857

PHOSPHATE MODIFIED PROTEINASE-ALTERED STARCH

Saul Rogols, Circleville, Ohio, Robert L. High, Charlotte, N.C., and James E. Green, Kilbourne, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of application Ser. No. 773,959, Nov. 6, 1968. This application Mar. 8, 1971, Ser. No. 122,156
Int. Cl. C08b *19/04*; C12b *3/06*; D21b *3/28*
U.S. Cl. 195—7 3 Claims

A phosphate modified, proteinase-altered starch prepared by effecting an enzymic reaction between a proteinase and the protein fragments of a starch molecule, and by the addition of a soluble, monobasic phosphate to the slurried starch. Although the phosphate modification may take place first, or simultaneously with the proteinase alteration, it is presently preferred that the proteinase alteration be accomplished first, because it appears to improve the extent of phosphate bonding. The phosphate modified, proteinase-altered starch of this invention is useful in improving the properties of paper, especially burst, tear, and tensile strength. Considerable improvement in opacity was also observed, because of the higher percentage of TiO_2 retention possible with this starch derivative.

3,753,858

METHOD OF CONVERTING GLUCOSE INTO FRUCTOSE

Yoshiyuki Takasaki, and Akira Kamibayashi, Chiba-shi, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Jan. 15, 1969, Ser. No. 791,309
Claims priority, application Japan, Jan. 20, 1968, 43/3,433
Int. Cl. 13k *1/00, 9/00*
U.S. Cl. 195—31 F 7 Claims

A method for converting glucose into fructose using a microorganism from the Streptomyces genus in which a glucose isomerizing enzyme is fixed in the microorganism by the step of treating the microorganism containing the enzyme at a temperature of about 60° C. to about 85° C.

3,753,859

MICROBIOLOGICAL PROCESS FOR PREPARING THE AMINO ACIDS TRANS-4-n PROPYL-L-PROLINE AND TRANS-4-ETHYL-L-PROLINE

Bruce W. Churchill, Kalamazoo, Brenda J. Rakow, Portage, and Malcolm E. Bergy, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Micb

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,389
Int. Cl. C12d *1/02*
U.S. Cl. 195—47 7 Claims

A microbiological process for preparing the amino acids trans-4-n propyl-L-proline and trans-4-ethyl-L-proline which are useful as intermediates for the preparation of antimicrobially active lincomycin antibiotics. Further, trans-4-n propyl-L-proline is useful to inhibit the production of lincomycin B in a lincomycin fermentation.

3,753,860

PRESERVATION OF BOVINE STOMACHS FOR RENNET EXTRACTION

Richard B. Dardas, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,418
Int. Cl. C07g *7/026*
U.S. Cl. 195—65 1 Claim

High recovery yields of rennet are obtained from calf and adult bovine stomachs preserved by dipping the stomachs in a 1 to 10% w./v. propylene glycol solution of a 1:1 mixture of the methyl and propyl esters of p-hydroxybenzoic acid, and storing under refrigeration.

3,753,861

BINDING ENZYMES TO CARBONYL POLYMERS

Peter Salvatore Forgione, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 8,089, Feb. 2, 1970. This application Mar. 13, 1972, Ser. No. 234,299

Int. Cl. C07g *7/02*

U.S. Cl. 195—68 21 Claims

A hydrophilic, sulfited carbonyl polymer having a catalytically active enzyme covalently bound thereto, a method for the production thereof and a method for converting substrates to their conversion products therewith, are disclosed.

3,753,862

METHOD OF MAKING FUNGICIDAL SUBSTANCE AGAINST CANDIDA AND CANDIDA-LIKE, YEAST-LIKE FUNGI

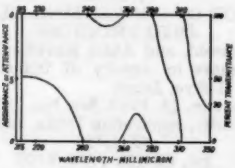
Masami Oimomi, 1131 Mega, Shikama-ku, Himeji-shi, Hyogo-ken, Japan

Filed Mar. 15, 1971, Ser. No. 124,204

Claims priority, application Japan, Apr. 1, 1970, 45/27,661

Int. Cl. C12b *1/00*

U.S. Cl. 195—96 4 Claims



The method of making a fungicidal substance by culturing a strain of enterobactic FERM No. 444 and extracting the substance from the culture.

3,753,863

REAGENT FOR MEDICAL TESTING WHICH CONTAINS A BENZIDINE-LIKE COMPOUND

Roy E. Speck, Indianapolis, Ind., assignor to Bio-Dynamics, Inc., Indianapolis, Ind.

No Drawing. Filed Nov. 22, 1971, Ser. No. 200,842

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 C 11 Claims

A liquid reagent is disclosed which has improved stability. It has been found that reagents containing benzidine or benzidine-like compounds are made stable if they contain at least about 50% of a compound selected from the group consisting of 1,2-ethanediol, 1,2-propanediol, 1,3-propanediol, 1,4-butanediol, 2,3-butanediol and 1,2,3-propanetriol.

3,753,864

PRECIPITATING SOLUTION FOR AMYLASE ASSAY

Arthur L. Babson and Susan R. Babson, Chester, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,294

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R 4 Claims

A stable, temperature-independent precipitating agent solution comprising an aqueous solution of zinc chloride and ethylene glycol monoalkyl ether is provided for use in an improved amylase assay. In the assay, a fluid test sample containing an unknown concentration of amylase is incubated with a water-soluble, dyed starch substrate for a specified period of time, after which the precipitating agent solution of this invention is added to remove all dyed starch which has not been hydrolyzed by the amylase, and the optical density of the remaining supernatant fluid is measured to indicate amylase concentration in the test sample.

3,753,865

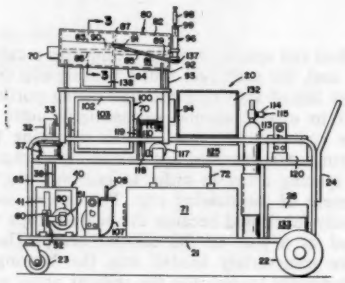
METHOD AND APPARATUS FOR PRESERVING HUMAN ORGANS EXTRACORPOREALLY

Folkert O. Belzer, Mill Valley, and Chester W. Truman, Daly City, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Application Apr. 21, 1969, Ser. No. 825,099, which is a continuation-in-part of abandoned application Ser. No. 727,762, May 9, 1968. Divided and this application Mar. 12, 1971, Ser. No. 123,750

Int. Cl. A61b *19/00*; A61m *1/03*; C12k *9/00*

U.S. Cl. 195—127 16 Claims



A human organ is stored, between removal from one body and implantation in another, in an apparatus mounted on a wheeled cart. The apparatus has a pulsatile pump for pumping plasma, a heat exchanger connected to the outlet of the pump for cooling the plasma to about 4° to 8° C., and a perfusion chamber to which the cooled plasma is supplied. The perfusion chamber includes a support for the organ and means for connecting the organ to the pulsing flow of cold plasma. Venous effluent from the organ is collected and conducted by gravity to a membrane oxygenator, which returns oxygenated plasma to the pulsatile pump for recirculation through the organ.

3,753,866

PROCESS AND APPARATUS FOR MAKING COKE OF EVEN SIZE

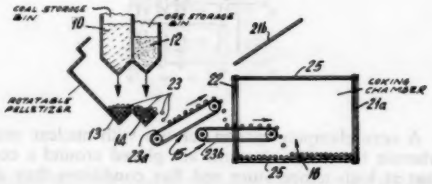
Werner Wenzel, Hermann Schenck, Heinrich-Wilhelm Gudenau, and Enno Wieting, Aachen, Germany, assignors to Firma Carl Still

Filed Aug. 21, 1970, Ser. No. 65,935

Claims priority, application Germany, Aug. 28, 1969, P 19 43 763.9

Int. Cl. C10b *45/02*, *53/08*

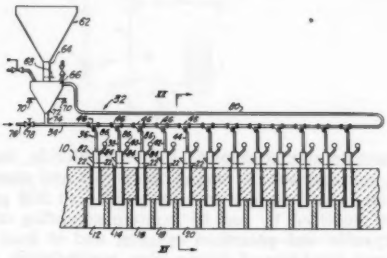
U.S. Cl. 201—6 3 Claims



A process for producing coke of substantially even-size pieces from caking coals which in coking yield a coherent

cake, which comprises embedding materials in locally concentrated amounts into the coal to be coked capable of weakening the coherence of the cake at determined places, thereby subdividing the cake and rendering possible its breaking up into even-size pieces upon discharge from the coking chamber. The invention also comprises an apparatus for carrying out the process.

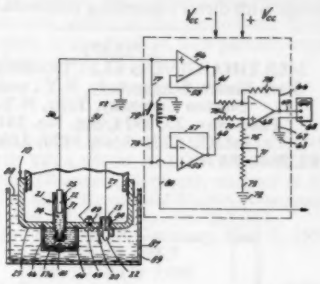
3,753,867
APPARATUS FOR CHARGING COKE OVENS
Erich Wiemer, Hellweg, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Apr. 14, 1971, Ser. No. 133,850
Int. Cl. C10b *31/00*
U.S. Cl. 202—262 **9 Claims**



A plurality of coal conveying conduits extend longitudinally along the coke oven battery in spaced parallel relation to each other. Branch conduits connect the coal conveying conduits with pressure reducing apparatus therebelow. The pressure reducing apparatus is connected to the charging holes and is arranged to separate the carrier gas from the coal particles. The carrier gas is withdrawn by means of suction conduits and the coal particles flow by gravity through the charging holes into the coke oven chambers. Another embodiment of the invention includes a vehicle movable along the roof of the coke oven battery that has transfer bins thereon connectable to the respective branch conduits. The carrier gas is separated from the coal particles in the transfer bins and conveyed through suitable dust collecting apparatus before the carrier gas is vented to the atmosphere. Another embodiment includes a flexible conduit connecting the transfer bins to the source of coal and pneumatically conveying the coal particles through the flexible conduit.

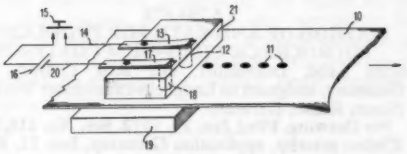
3,753,868
METHOD OF DETERMINING DISSOLVED OXYGEN CONTENT
James R. Arrington, Muskego, and Karl King, Milwaukee, Wis., assignors to American Limnetics Instruments, Inc.
Original application June 5, 1970, Ser. No. 43,863, now Patent No. 3,696,019. Divided and this application June 23, 1972, Ser. No. 265,747
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **3 Claims**

An electrode for sensing dissolved oxygen in an electrolytic media is composed of a core having a major portion of thallium and a minor amount of mercury and an outer coating of a saturated thallium-mercury amalgam thereon. The electrode is formed as a solid electrode core and the preferred amount of thallium is 87% by weight with the mercury being present in the amount of 13%. The electrode composition is employed to sense dissolved oxygen in an electrolytic media and is substantially unaffected



by wide variations in temperature, pH, pressure, salinity and flow rate.

3,753,869
ELECTROCHEMICAL RECORDING METHOD
Alphonse Ambrosia, Mahopac, and Carlos J. Sambucetti, Mohegan Lake, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 20, 1971, Ser. No. 209,930
Int. Cl. B41M *5/20*
U.S. Cl. 204—2 **18 Claims**



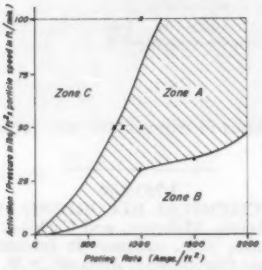
A dot matrix electrochemical recorder printing by electrolysis which includes plural silver electrode pins which rub against a paper recording medium impregnated with a conductive salt selected from an alkali, ammonium fluoride and ammonium oxalate alone with a reducing agent selected from ascorbic acid, stannous chloride, stannous sulfate, potassium hydroxide, and some reducing phenols and amines, such as paraaminophenol.

3,753,870
PROCESS FOR PRETREATING STEEL PLATES FOR ENAMELLING
Hans Hoffmann, Leichlingen, Gerhard Trogel, Bergisch Neukirchen, Waldemar Immel, Solingen-Merscheid, Eberhard Knaak, Solingen-Ohligs, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany, and Friedr. Blasberg Gesellschaft mit Beschrankter Haftung und Co. Kommanditgesellschaft, Solingen-Merscheid, Germany
No Drawing. Continuation of abandoned application Ser. No. 864,516, Oct. 7, 1969. This application Dec. 2, 1971, Ser. No. 204,324
Int. Cl. C23b *5/08*; C23d *3/00*
U.S. Cl. 204—34 **7 Claims**

A process of pretreating steel plates for enamelling by degreasing, pickling, metallising, neutralising and drying, wherein metallising is carried out galvanically in an acid base which contains besides nickel and/or cobalt ions magnesium and chlorine ions; the nickel and cobalt is applied to the surface to be enamelled in quantities of from 0.3 up to 0.7 g./m.², calculated as metal. Optionally, before the metallising step an electrolytically

degreasing and pickling step is performed. By the aforesaid treatment the overall time consumption for pretreating is considerably shortened. The pretreating is suitable for steel surfaces to be enamelled and is of particular advantage with direct enamelling processes.

3,753,871
MULTIHARDNESS ELECTRODEPOSITS
Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.
Filed Nov. 23, 1971, Ser. No. 201,360
Int. Cl. C23b *5/48, 5/20, 5/08*
U.S. Cl. 204—35 R **4 Claims**



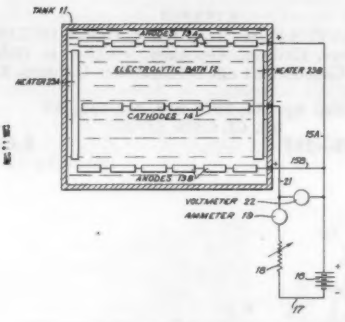
Electrodeposits having zones of varying hardness are obtained by varying the degree of mechanical activation per unit volume of the electrodeposit during its formation.

3,753,872
METHOD OF AND BATH FOR PRODUCING MICROCRACK CHROMIUM COATINGS
Martin Köhl, Dusseldorf, and Ralf Ludwig, Neuss, Germany, assignors to Langbein-Pfanhauser Werke AG, Neuss, Rhine, Germany
No Drawing. Filed Jan. 10, 1972, Ser. No. 216,724
Claims priority, application Germany, Jan. 11, 1971, P 21 00 971.2
Int. Cl. C23b *5/08, 5/32, 5/50*
U.S. Cl. 204—41 **5 Claims**

A microcrack chromium coating is applied by electroplating it upon a coating of nickel, cobalt, nickel-cobalt, nickel-iron or iron-cobalt previously electrodeposited upon a substrate, e.g. of steel, from an electroplating bath containing 5 g./liter to the limit of solubility of at least one aromatic mono-, di- or polycarboxylic acid anhydride or salt. Preferably the aromatic carboxylic acid is benzoic acid, phthalic acid or phenylacetic acid and is present in an amount of 5 g./liter to 70 g./liter or the limit of solubility whichever is less, the electroplatinng is carried out at a temperature of 35 to 70° C. and the current density of 3 to 20 a./dm.².

3,753,873
PROCESS FOR THE ELECTRODEPOSITION OF A COLORED NICKEL-TIN ALLOY COATING
Louis H. Cates, Scarsdale, N.Y., Stanley Geffon, St. Petersburg, Fla., and Samuel Geffon, New York, and Walter Schwartz, Bronx, N.Y., assignors to The Enequist Chemical Co., Inc. Brooklyn, N.Y.
Continuation of abandoned application Ser. No. 621,002, Oct. 6, 1967. This application Nov. 6, 1970, Ser. No. 87,604
Int. Cl. C23f *5/38*
U.S. Cl. 204—43 **1 Claim**

Electroplating apparatus for plating an article immersed in an electrolytic bath by applying a positive DC voltage to an anode immersed in the electrolytic bath and by applying a negative DC voltage to the article, comprises an electrolytic bath containing an aqueous solution of nickel in a range of 5 to 100 grams per liter and provided by one of a group consisting of nickel sulfate, nickel sulfamate, nickel fluoborate, nickel chloride, nickel carbonate, nickel cyanide, nickel acetate, nickel ethylene diamine tetra acetic acid, nickel oxide and nickel tartrate, tin in a range of 5 to 100 grams per liter and provided by one of a group consisting of sodium stannate, potas-



sium stannate, stannic chloride, stannous chloride, stannic sulfate, stannous sulfate, stannic fluoborate and stannous fluoborate, alkali cyanide in a range of 5 to 200 grams per liter provided by one of a group consisting of sodium cyanide and potassium cyanide, and at least one of a group consisting of copper, zinc, molybdenum, selenium, arsenic and sulfur in a range of 0 to 20 grams per liter.

3,753,874
METHOD AND ELECTROLYTE FOR ELECTRODEPOSITING A GOLD-ARSENIC ALLOY
Richard Henry Zimmerman, Palmyra, and Richard Lee Brenneman, Camp Hill, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
No Drawing. Continuation-in-part of abandoned application Ser. No. 807,105, Mar. 13, 1969. This application Dec. 21, 1971, Ser. No. 210,609
Int. Cl. C23b *5/42*
U.S. Cl. 204—43 G **28 Claims**

An aqueous electrolyte solution having a pH from 5.5 to 8 for depositing hard, ductile, and bright arsenic containing gold has been provided; besides the various buffers and the alkali gold cyanide complex, a thio sulfate is added to facilitate the proper inclusion of arsenic in the gold deposit; salt compositions suitable for obtaining aqueous electrolytes, a method for depositing the arsenic gold, the gold alloy, and electrical devices having the arsenic gold deposit on a surface of these devices have also been disclosed.

3,753,875
METHOD OF TREATMENT OF METALLIC SURFACES
Philippe Yves Christian Douet, Saint-Etienne, Loire, France, assignor to Centre Stephanois de Recherches Mecaniques Hydromechanique et Frottement, Andrezieux-Boutheon, Loire, France
No Drawing. Filed June 9, 1971, Ser. No. 151,478
Claims priority, application France, June 26, 1970, 7023726; Feb. 4, 1971, 7103716
Int. Cl. C23b *11/00*
U.S. Cl. 204—56 R **4 Claims**

A method of treatment of metallic surfaces in order to improve their resistance to wear and to seizure consists of electrolyzing a part having a metallic surface which serves as an anode in a bath consisting of water and one or a mixture of salts containing at least one element belonging to the group of elements constituted by sulphur,

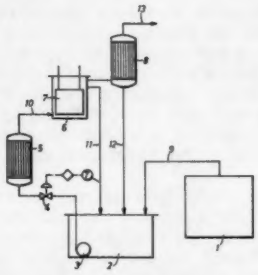
selenium, tellurium, phosphorus, boron, silicon, fluorine, chlorine, iodine, bromine, arsenic, the temperature of the bath being comprised between the ambient temperature and the boiling temperature of the mixture of salt or salts and water. The bath may be composed of a mixture of water with alkaline sulphides, thiocyanates or iodides.

3,753,876

PROCESS FOR ELECTROCHEMICAL FLUORINATION

Peter Voss, Leverkusen, Hans Niederprum, Monheim, Rhineland; Gustav Kaule, Cologne, and Rudiger Trupp, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 10, 1972, Ser. No. 225,075
Claims priority, application Germany, Feb. 13, 1971, P 21 06 870.2
Int. Cl. B01k *3/00*; C22d *1/02*; C23b *5/68*
U.S. Cl. 204—59 R 7 Claims



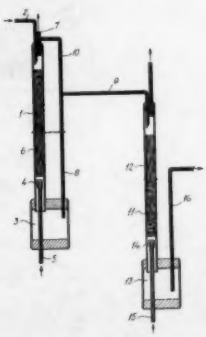
Circulation of a mixture of composition to be fluorinated and anhydrous hydrofluoric acid as electrolyte through a cooling zone, an electrolytic cell and a relatively large storage zone while removing insoluble fluorination products from the electrolyte before a second passage through said cell.

3,753,877

ELIMINATION OF FLOATING SLIME DURING ELECTROLYTIC REFINING OF COPPER

Nils Folke Rune Lindstrom, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed May 25, 1971, Ser. No. 146,663
Claims priority, application Sweden, May 28, 1970, 7,380/70, 7,381/70, 7,382/70
Int. Cl. B01k *3/06*; C22d *1/16*
U.S. Cl. 204—106 19 Claims



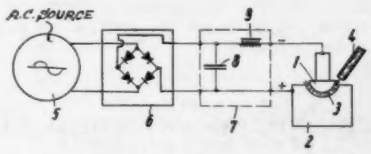
A method for eliminating floating slime in the electrolytic refinement of copper. The method uses a novel electrolyte which contains specific quantities of trivalent arsenic, pentavalent arsenic and pentavalent antimony; the arsenic content being obtained and maintained by special procedural steps such as direct addition of the substances to the solution, reduction of existing quantities of As(V) in the solution or by increasing the arsenic content in the anode. The method also includes the expedient of increasing the current density of the electrolysis, by using the novel electrolyte in combination with periodic reversal of the current flow.

3,753,878

METHOD OF ELECTROCHEMICALLY MACHINING TITANIUM OR TITANIUM ALLOY WORKPIECES

Peter Gosger, Burg (Wupper), Germany, assignor to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Germany

Filed Sept. 21, 1971, Ser. No. 182,462
Claims priority, application Germany, Oct. 7, 1970, P 20 49 196.7
Int. Cl. B23p *1/00*
U.S. Cl. 204—129.1 3 Claims



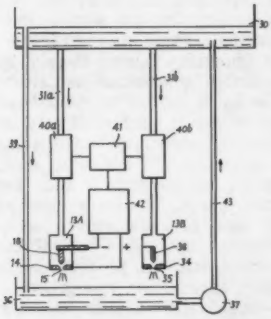
A method and apparatus for electrochemically machining workpieces of titanium or titanium alloy which have not been hitherto amenable to such machining because of the rough surfaces which result. It has been found that substantially eliminating the ripple in the rectified A.C. signal applied to the workpiece for machining produces satisfactorily smooth surfaces on titanium or titanium alloy workpieces and this can be accomplished by passing the rectified signal through a low frequency filter circuit.

3,753,879

METHOD AND MEANS FOR PRODUCING HOLES

Timothy John Blee, Leamington Spa, England, assignor to Associated Engineering Limited, Leamington Spa, Warwickshire, England

Filed Feb. 3, 1971, Ser. No. 112,181
Int. Cl. B01k *3/00*; B23p *1/00, 1/02*
U.S. Cl. 204—129.2 16 Claims



This invention relates to the production, by electrochemical machining, of holes of the required flow characteristics, in workpieces such as injector nozzles of fuel injection equipment. According to this invention, after

a hole has been initially formed undersize, it is enlarged by passing therethrough a liquid electrolyte whilst a current flows between the workpiece and a tool associated therewith. The change in flow rate of electrolyte, or the change in pressure drop across the hole, is sensed as the hole is enlarged, and the electrochemical machining is stopped when the flow rate, or pressure drop, reaches a predetermined value.

3,753,880

METHOD OF PRODUCING A TOOL FOR THE NON-CUTTING WORKING OF MATERIALS

Ursula Bauer-Steinke, and Bruno Maier, Worblingen, and Klaus Bretthauer, Singen am Hohentwiel, Germany, assignors to Swiss Aluminum Ltd., Chippis, Switzerland

No Drawing. Filed Aug. 10, 1971, Ser. No. 170,624
Claims priority, application Switzerland, Aug. 14, 1970, 12,234/70
Int. Cl. C23b *1/00, 3/06*
U.S. Cl. 204—129.5 **1 Claim**

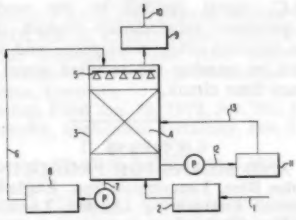
In the method of producing tools for the non-cutting working of materials, for example the extrusion of metals and plastics, whereby the working surfaces are shaped by electro-erosive treatment, the surfaces are afterwards polished electrolytically.

3,753,881

ELECTROLYTIC PROCESS FOR DESTRUCTION OF ODOROUS IMPURITIES

Ernest R. Zabolotny, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,802
Int. Cl. B01k *1/00;* **C01d** *7/34*
U.S. Cl. 204—130 **7 Claims**



A process for removing pollutant impurities and destroying oxidizable pollutant impurities in a gas stream comprises contacting the gas stream with an electrolytically regenerable liquid stream capable of oxidizing the pollutant impurities carried therein, separating the gas stream and the liquid stream and electrolytically regenerating the liquid stream whose oxidizing capability is reduced due to the destruction of pollutant impurities. The electrolytically regenerable liquid stream is recycled for further contacting with additional pollutant impurities. The specific improvement in such a process comprises subjecting the liquid stream, either on a periodic or continuous basis, to a low temperature crystallization whereby pollutant impurities which accumulate in the system and certain oxidation products can be crystallized from the liquid stream, e.g., nitrogenous contaminants. Destruction of oxidizable pollutant impurities also occurs at the electrodes of the regeneration means.

Apparatus for removing pollutant impurities and destroying oxidizable pollutant impurities carried in a gas stream comprises contact means to provide good mass transfer between the pollutants in the gas stream and an electrolytically regenerable liquid stream capable of oxidizing the pollutant impurities, electrolytic regeneration means for the liquid stream which will regenerate the oxidizing capablity of the electrolytically regenerable liquid stream, and crystallization means which will remove pollutant impurities and certain oxidation products which accumulate in the electrolytically regenerable liquid stream and which are not totally oxidized.

3,753,882

METHOD FOR CONVERTING ALUMINUM AND ALUMINUM BASE, AND COPPER AND COPPER BASE MATERIAL SURFACES FROM A HYDROPHOBIC TO A HYDRAPHILIC STATE

Leo Missel, Palo Alto, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Mar. 7, 1972, Ser. No. 232,608
Int. Cl. C23b *1/00, 5/50*
U.S. Cl. 204—140 **31 Claims**

A method of converting an aluminum or aluminum base article surface from a hydrophobic to a hydrophilic state comprising the steps of making the surface to be converted the anode in a bath comprising an acid-free aqueous borax solution at a temperature between 100 and 200° F., and maintaining an applied anode current at a current density not exceeding 5 amperes/square foot for a total current application maximum of 300 coulombs/square foot. The hydrophilic surface produced is exceptionally amenable to subsequent coating by various paints such as epoxy base, melamine base, latex, oil base, etc.

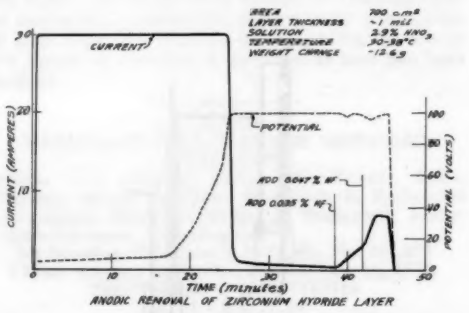
Copper and copper base surfaces are similarly made hydrophilic in the same bath but with the difference in that the copper surface is made the cathode, the current density is at least 1 ampere/square foot, and minimum total current application of 30 coulombs/square foot is utilized. The bath need not be acid-free. The hydrophilic surface so made is extremely amenable to subsequent electroplating, resulting in improved adhesion.

3,753,883

PROCESS FOR PROVIDING A HYDRIDE-FREE AND OXIDE-FREE SURFACE ON ZIRCONIUM AND ZIRCONIUM-ALLOY BODIES

Bruce Griggs, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed June 26, 1972, Ser. No. 266,110
Int. Cl. C23b *1/00, 1/02*
U.S. Cl. 204—144.5 **7 Claims**



A zirconium or zirconium-alloy body having a zirconium hydride surface layer is electrolytically anodized in aqueous nitric acid solution to remove the hydride surface. Fluoride ions are then added to the solution and

electrolytic anodization is continued. Chemical etching with HNO_3-HF solution thereupon provides a hydride-free and oxide-free surface. Chemical etching may be in situ employing the anodization bath as etchant if the concentration of fluoride ions therein is high or a separate etchant solution may be employed.

3,753,884

PROCESS FOR THE PHOTOSYNTHESIS OF HYDROCHLORATES OF CYCLOALKANONE OXIMES

Andre Nahmias and Georges Lucas, Paris, Rene Kern, Savigny-sur-Orge, and Claude Poulain, Orsay, France, assignors to Societe Anonyme dite: Aquitaine Total Organico, Paris, France

Filed Apr. 15, 1971, Ser. No. 134,275
Claims priority, application France, Apr. 21, 1970, 7014478
Int. Cl. B01j *1/10*
U.S. Cl. 204—162 XN 7 Claims

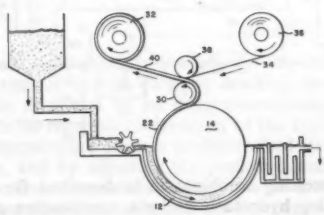
A photosynthesis process is provided for the preparation of hydrochlorates of cycloalkanone oximes containing more than 5 carbon atoms, by the reaction under irradiation of nitrosyl chloride in a cycloalkane solution in which the nitrosyl chloride is prepared in situ in one section of the reactor, known as the non-oximating zone, separated by a partition with an overflow device from the oximating zone, from a solution of sulphuric nitrosyl acid, dispersed in a mixture of hydrochloric acid and a solvent of cycloalkane. The resulting sulphuric acid is removed from the reactor while the phase containing the nitrosyl chloride extracted by the solvent flows over the overflow device into the oximation zone.

3,753,885

COUNTERCURRENT ELECTRODEPOSITION PROCESS

Fred H. Hammond, Jr., Wellesley, Mass., assignor to The Kendall Company, Walpole, Mass.

Filed Dec. 27, 1971, Ser. No. 212,418
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 10 Claims



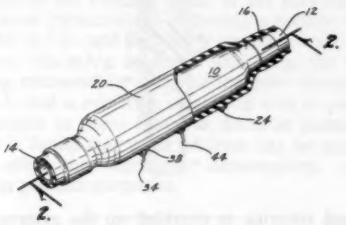
A continuous electrodeposition method for producing a coherent, organic polymeric film from an aqueous dispersion of electrodepositable organic polymeric particles having a reference electrode at least partially immersed therein is disclosed. The method comprises continuously moving a depositing conductive surface so that a portion thereof is immersed at any one time in said aqueous dispersion of organic polymeric particles, while causing said aqueous dispersion to flow counter to the direction of movement of said depositing conductive surface, and subjecting the aqueous dispersion between said depositing conductive surface and said reference electrode to a D.C. electric field, thereby causing said organic polymeric particles to migrate towards said depositing conductive surface and form a coherent, organic polymeric film thereon.

3,753,886

SELECTIVE DESTRUCTION OF BACTERIA

Robert R. Myers, deceased, by Helen T. Myers, Executor, 904 NE. 2nd St., Boca Raton, Fla. 33432

Continuation-in-part of abandoned application Ser. No. 710,202, Mar. 4, 1968. This application Feb. 11, 1971, Ser. No. 114,670
Int. Cl. C02b *1/82*; C02c *1/00, 1/02*
U.S. Cl. 204—186 1 Claim



A method and means for purifying water and water-base liquids whereby a controlled amount of alternating electrical current is passed through the liquid to destroy all forms of plant and animal life therein, thereby purifying the same. A hollow housing is utilized and has an elongated terminal provided therein which is electrically connected to a source of electrical energy. The housing is grounded and is covered with an insulative material. Liquid in the housing will act as a conductor between the terminal and the grounded housing thereby causing electrical current to flow therethrough which causes the liquid to be purified.

3,753,887

ALKALI METAL SPECIFIC MEASURING ELECTRODE

Orah Kedem, Rehovot, Ester Loebel, Holon and Mordechai Furmansky, Petch Tikavah, Israel, assignors to Hydronautics, Incorporated, Laurel, Md.

No Drawing. Filed May 25, 1970, Ser. No. 40,350
Claims priority, application Israel, June 4, 1969, 32,341
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 M 14 Claims

An electrode for measuring the activity of alkali metal ions in solution, a solid membrane comprising a polymeric support material, an uncharged ion carrier and a solvent for the ion carrier in which the solvent may act as a plasticizer for the support and in which the support and the solvent together provide a negative charge to the membrane corresponding to an anion concentration of 10^{-6} to 10^{-3} milliequivalents per gram of solvent.

3,753,888

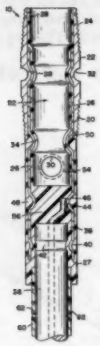
ANODE FITTING

Sam Alewitz, Painesville, Ohio, assignor to Perfection Corporation, Madison, Ohio

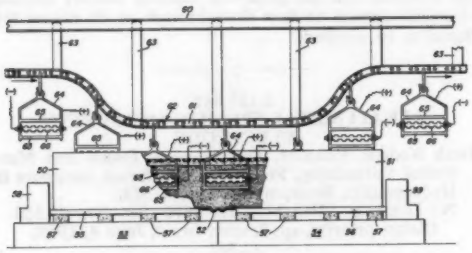
Continuation-in-part of application Ser. No. 734,940, June 6, 1968, now Patent No. 3,542,663. This application Nov. 24, 1970, Ser. No. 92,355
Int. Cl. C23f *13/00*
U.S. Cl. 204—197 6 Claims

An anode fitting for use in hot water tanks comprising a connector member adapted to be threadedly received within an opening in the water tank, a tubular intermediate member telescoped within the connector member and attached thereto, and a cylindrical electrode telescoped into the tubular intermediate member and secured

thereto. An impervious covering is provided on the external surface of the tubular intermediate member. A perforated covering is provided on the external surface of the electrode.



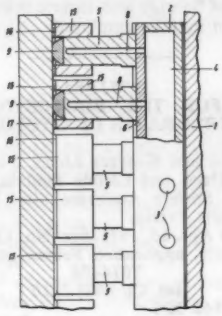
3,753,889
VIBRATORY APPARATUS
Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.
Continuation-in-part of abandoned application Ser. No. 252,881, May 12, 1972, which is a division of application Ser. No. 102,287, Dec. 29, 1970. This application July 13, 1972, Ser. No. 271,527
Int. Cl. B65g *49/02*
U.S. Cl. 204—198 **5 Claims**



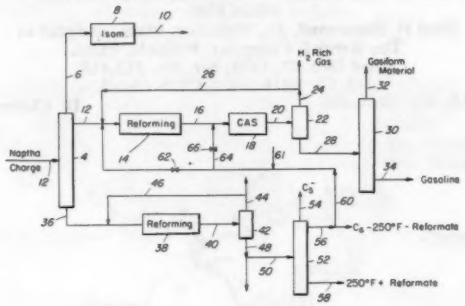
An electrodeposition apparatus comprising a vibratory container having a generally elongate configuration, with a cross section curved on at least one side so as to produce a mass rotational movement of a mass of small particles and electrolyte positioned loosely therein when vibration is imposed upon such container, and means associated therewith to independently suspend, within the mass of particles and electrolyte in such container, at least one set of electrodes isloated from the vibration imposed upon such container except by contact with said particles and electrolyte.

3,753,890
MULTIPLE TOOL FOR ELECTROCHEMICAL MACHINING OR FORMING
Heinz Köppern and Helmut Kubeth, Hattingen (Ruhr), Germany, and Lynn A. Williams, Winnetka, Ill., assignors to Koppern & Co., KG Maschinenfabrik
Filed Aug. 15, 1969, Ser. No. 850,558
Claims priority, application Germany, July 17, 1968, P 17 65 779.3
Int. Cl. B23p *1/02*; C23b *5/72*; B01k *3/04*
U.S. Cl. 204—224 **19 Claims**

An improved multiple tool for electrochemical machining or forming, with a plurality of simultaneously operating individual tools for processing large workpieces, wherein the number of countersinking operations is a multiple of the number of individual tools, wherein the improvement comprises a reliable safety arrangement against leakage of the electrolyte so as to prevent the whole surface of the workpiece from being exposed to the action of the electrolyte.



3,753,891
SPLIT-STREAM REFORMING TO UPGRADE LOW-OCTANE HYDROCARBONS
Richard G. Graven, Westmont, Haddon Township, Camden County, and Heinz Heinemann, Princeton, N.J., assignors to Mobil Oil Corporation
Filed Jan. 15, 1971, Ser. No. 106,819
Int. Cl. C10g *23/02*, *35/06*
U.S. Cl. 208—62 **12 Claims**

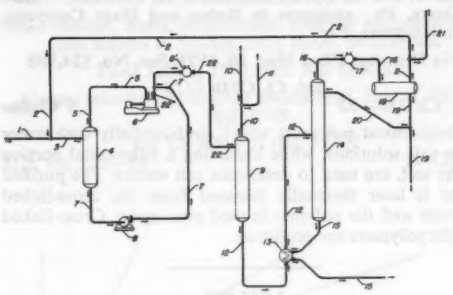


A processing combination is described for upgrading low boiling hydrocarbons by a combination of catalytic reforming and selective conversion of paraffinic components therein to enhance yield of aromatic hydrocarbons by contact with a crystalline aluminosilicate catalyst having particular conversion characteristics.

3,753,892
HYDROCARBON-HYDROGEN SEPARATION METHOD
James D. Weith, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed May 27, 1971, Ser. No. 147,563
Int. Cl. C10g *7/02*
U.S. Cl. 208—102 **11 Claims**

In a process for the separation of hydrogen, normally gaseous hydrocarbons and normally liquid hydrocarbons from a hydrocarbon conversion zone effluent wherein the effluent is first separated in a first separation zone to produce a hydrogen phase and a liquid phase and the liquid phase is subsequently separated to produce a normally

liquid stream, a C_1–C_4 gaseous stream and a liquid C_3–C_4 (LPG) stream, the recovery of C_3–C_4 hydrocarbons, as



liquid, is increased by passing a portion of the C_1–C_4 stream to the first separation zone.

3,753,893

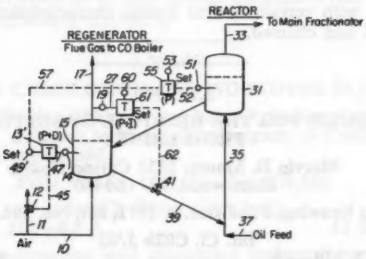
FCC CATALYST SECTION CONTROL

Wooyoung Lee, Westmont, Bernard C. Long, Woodbury, and Vern W. Weekman, Jr., Cherry Hill, N.J., assignors to Mobil Oil Corporation

Continuation of abandoned application Ser. No. 95,680, Dec. 7, 1970. This application Mar. 10, 1972, Ser. No 233,711

Int. Cl. C10g *13/18*

U.S. Cl. 208—164 **9 Claims**



The specific embodiments provide for controlling a catalyst section of a fluid catalytic cracking system by adjusting the flow rate of an oxygen-containing gas to a regenerator in response to deviation of the regenerator dense bed temperature from a predetermined dense bed temperature, and by adjusting the predetermined regenerator dense bed temperature in response to a deviation of the reactor temperature from a predetermined reactor temperature. Further, the regenerated catalyst flow rate is adjusted in response to deviation of the flue gas temperature from a predetermined flue gas temperature.

3,753,894

WATER INJECTION BETWEEN CATALYST BEDS IN HYDRODESULFURIZATION OF RESIDUUM FEED

John D. Shoemaker and Kenneth L. Riley, Baton Rouge, La., assignors to Esso Research and Engineering Company

Continuation-in-part of application Ser. No. 119,222, Feb. 26, 1971, now Patent No. 3,720,602, dated Mar. 13, 1973. This application Nov. 17, 1971, Ser. No. 199,454

Int. Cl. C10g *23/02*

U.S. Cl. 208—216 **4 Claims**

A hydrodesulfurization process for processing a sulfur-containing petroleum residuum feed wherein water is injected between the several catalyst beds of a multi-bed reactor to quench the products of the reaction and simultaneously to suppress deactivation of the catalyst, particularly as occurs during the initial period of a production run. The water can be added in concentration ranging up to about 50 percent, but preferably is added in concentration ranging up to about 20 percent, based on the volume of gases in the reactor, because above about the 20 percent level, the effects of hydrogen dilution offset any improvements obtained in suppression of catalyst deactivation. The catalysts comprise a metal or compounds of the metal, or metals, of Group VIB and/or Group VIII of the Periodic Table of the Elements, particularly those characterized as having a surface area of at least 100 $m.^2/g.$, and preferably a surface area ranging from about 100 $m.^2/g.$ to about 500 $m.^2/g.$, the surface area being measured in pores having pore diameters of 30 to 80 A. and a minimum of surface area or pore volume measured in pores having a diameter greater than 100 A. It is found that water addition has no significant adverse effect on hydrogen consumption, catalyst strength, or product properties.

3,753,895

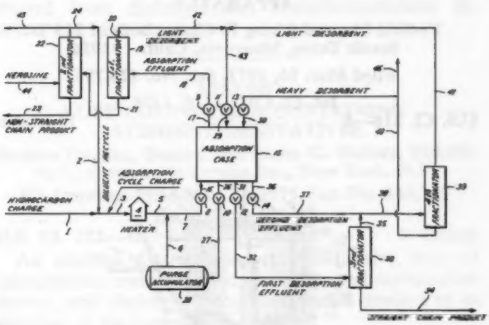
SEPARATION PROCESS FOR HIGH CARBON NUMBER STRAIGHT CHAIN HYDROCARBONS BY ADSORPTION

James O. Francis, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Apr. 19, 1971, Ser. No. 135,104

Int. Cl. C07c *7/12*; C10g *23/04*

U.S. Cl. 208—310 **7 Claims**



Straight chain hydrocarbons in the C_{13}–C_{24} carbon number range are separated from a hydrocarbon mixture by selective adsorption into a molecular sieve adsorbent in a vapor phase adsorption step operated at an elevated pressure wherein the necessary operating temperature is maintained below 700° F. by adding sufficient low boiling hydrocarbon to maintain the dew point temperature of the hydrocarbon mixture between 575° F. and 650° F. Subsequently, the straight chain hydrocarbons are recovered by desorption from the molecular sieve adsorbent.

3,753,896

N-PARAFFIN ADSORPTION WITH A 20 TO 55% OVERCHARGE

William R. Bryan, and George F. de Verteuil, Pointe-a-Pierre, Trinidad and Tobago, assignors to Texaco Trinidad, Inc., Pointe-a-Pierre, Trinidad and Tobago

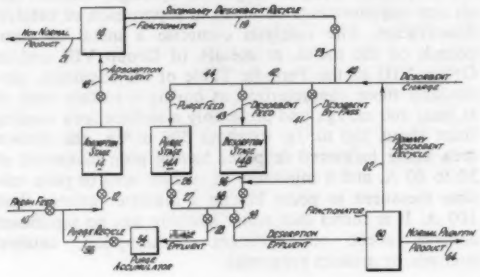
Filed May 20, 1971, Ser. No. 145,366

Int. Cl. C07c *7/12*; C10g *25/04*

U.S. Cl. 208—310 **16 Claims**

A multi-step vapor phase hydrocarbon separation process wherein the straight chain hydrocarbon components

of a feed mixture containing said components and non-straight chain hydrocarbon components in an adsorption zone are absorbed on a molecular sieve selective adsorbent in the adsorption step, and the straight chain components and subsequently removed from the selective adsorbent



in a desorption step to the extent of from about 70–90% by weight of the adsorbed straight chain hydrocarbon components by a desorbing medium comprising a lighter straight chain hydrocarbon or a mixture of said lighter straight chain hydrocarbons.

3,753,897

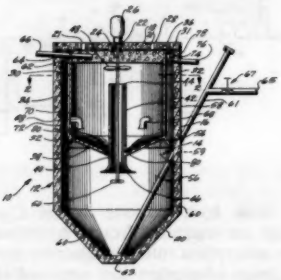
SEWAGE TREATMENT METHOD AND APPARATUS

Ye-Shid Lin, and Cheng F. Chang, both of 213 W. Scenic Drive, Monrovia, Calif. 91016

Filed Mar. 16, 1971, Ser. No. 124,790

Int. Cl. C02c *1/16, 1/08*

U.S. Cl. 210—5 10 Claims



A sewage treatment package plant receives incoming raw sewage and purifies it by performing an activated sludge process thereon. Oxygen for re-aeration of sludge in the stabilization and digestion stages of the process is supplied directly from aerated sewage in the aeration stage. The plant is of unitary structure and includes partition means to subdivide the interior into separate aeration, stabilization and sedimentation chambers with a separate digestion cavity being defined beneath the stabilization chamber. The sedimentation chamber has a volume sufficiently large to fully absorb the effects of shock loadings. Means are included for directing aerated sewage directly from the aeration chamber into the stabilization chamber and digestion cavity for re-aeration of the sludge.

3,753,898

DESALINATION PROCESS

Frank J. Glavis, Rydal, and David H. Clemens, Willow Grove, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Mar. 16, 1971, Ser. No. 124,908

Int. Cl. C02b *1/18*

U.S. Cl. 210—33 5 Claims

Cross-linked polymers which preferentially sorb water from salt solutions, while excluding a substantial portion of the salt, are used to desalinate salt waters. The purified water is later thermally released from the cross-linked polymer and the polymer is used over again. Cross-linked acrylic polymers are preferred.

3,753,899

MIXED BED DEIONIZATION

Robert Kunin, Yardley, and Paul A. Kittle, Gardenville, Pa., assignors to Rhom and Haas Company, Philadelphia, Pa

No Drawing. Continuation of abandoned application Ser. No. 85,737, Oct. 30, 1970. This application Feb. 4, 1972, Ser. No. 223,794

Int. Cl. B01d *15/04*

U.S. Cl. 210—33 10 Claims

An improved mixed bed deionization system comprising a mixture of cation and anion exchange resins in intimate association with one another, and more particularly, a mixed bed system comprising a mixture of strong acid cation exchange resins and weak base anion exchange resins with certain critical kinetic characteristics, is disclosed and claimed.

3,753,900

PROCESS FOR THE REMOVAL OF SULPHATE FROM BRINES

Marvin D. Moore, 1531 Carson Court, Homewood, Ill. 60430

No Drawing. Filed Dec. 3, 1971, Ser. No. 204,690

Int. Cl. C02b *5/02*

U.S. Cl. 210—45 2 Claims

A process is illustrated for removing sulphate from aqueous solutions by adding strontium carbonate or chloride to the solution and removing the insoluble strontium sulphate so formed. Strontium sulphate can then be reacted with ammonium carbonate, an amine carbonate, or sodium carbonate to regenerate strontium carbonate which can then be reused in the process.

3,753,901

FLOCCULATION OF AQUEOUS INDUSTRIAL WASTES USING POLYQUATERNARY AMMONIUM CHLORIDE POLYMERS

Charles M. Taubman, Flossmoor, and Annette M. Carabine, Niles, Ill., assignors to DeSoto Inc., Des Plaines, Ill.

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,920

Int. Cl. C02b *1/20*

U.S. Cl. 210—49 12 Claims

Aqueous wastes, and particularly aqueous latex paint wastes, are flocculated using a polymer of benzyl C_1–C_4 dialkyl acryloyl- or methacryloyl-oxyalkyl ammonium chloride. Preferred polymers are produced by aqueous solution polymerization at a temperature below about 90° C. and a proportion of acrylamide or methacrylamide is desirably present in the polymer.

3,753,902

FILTERABILITY OF WATER SUSPENDED MASSES

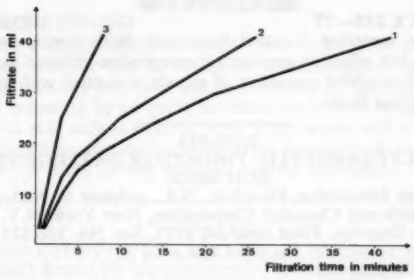
Hans Stettler, Basel, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

Filed July 2, 1970, Ser. No. 51,814

Claims priority, application Switzerland, July 4, 1969, 10,219/69

Int. Cl. B01d *21/00, 39/02*

U.S. Cl. 210—54 18 Claims



Water suspended inorganic masses, especially cement slurries, of improved filtrability, obtained adding thereto cation active polyamines and/or polyamidamines, guanidine derivatives as in U.S. patent application No. 812,441 and optionally $Ca(OH)_2$.

3,753,903

WELL COMPLETION AND WORKOVER FLUID

Paul W. Fischer, Whittier, and Julius P. Gallus, Anaheim, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Field Apr. 28, 1971, Ser. No. 138,200

Int. Cl. C10m *3/12, 3/22*

U.S. Cl. 252—8.5 A 11 Claims

A non-damaging well completion and workover fluid is disclosed. The fluid comprises a dispersion of finely divided solid wax particles and finely divided solid particles of a water-insoluble, acid-soluble inorganic material in an aqueous salt solution containing especially selected emulsifiers. The density of the fluid is controlled by varying the concentration of dissolved salts, and the viscosity can be increased by the addition of hydroxyethyl cellulose. A small amount of liquid hydrocarbon can be added to improve the fluid loss properties of the fluid.

3,753,904

SOLUBLE OIL ADDITIVE CONCENTRATE

Le Roy W. Holm, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,063

The portion of the term of the patent subsequent to June 27, 1989, has been disclaimed

Int. Cl. B01j *13/00;* E21b *43/20*

U.S. Cl. 252—8.55 D 7 Claims

An additive concentrate for the formulation of soluble oils comprising an admixture of about 1 to 12 parts of surface active alkyl aryl sulfonates per part of ethylene glycol monobutyl ether. The surface active sulfonate can be a mixture of preferentially oil-soluble and preferentially water-soluble alkyl aryl sulfonates.

3,753,905

TWO CYCLE LUBRICATION

Georges Jules Pierre Souillard and Frederic Francois Paul Van Quaethoven, Wezembeek-Oppem, Belgium, assignors to Cosden Oil & Chemical Company, Big Spring, Tex.

Continuation-in-part of abandoned application Ser. No. 778,858, Nov. 25, 1968, which is a continuation of application Ser. No. 555,052, June 3, 1966. This application Sept. 18, 1970, Ser. No. 73,575

Int. Cl. C10l *1/16;* C10m *1/32, 1/40*

U.S. Cl. 252—33.4 7 Claims

A lubricant which will be mixed with the liquid engine fuel is provided for a two-cycle engine, the lubricant comprising a major proportion of a polybutene, a minor proportion of a mineral oil and a minor proportion of an additive, such lubricant having the properties of resolving most of the problems attending two-cycle engine operation.

3,753,906

GREASE THICKENED WITH SYNERGISTIC PROPORTIONS OF BENTONITE CLAY AND POLYETHYLENE

James R. Burton, Groves, Tex., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,959

Int. Cl. C10m *5/26, 5/10*

U.S. Cl. 252—28 4 Claims

Grease thickened with synergistic proportions of bentonite clay having 30–40 carbon atoms and polyethylene having a molecular weight of 10,000–30,000 and contains small amounts of alkali metal nitrite and aromatic amine selected from diphenylamine, N-oleyltrimethylene diamine, and mixtures thereof.

3,753,907

LUBE COMPOSITION CONTAINING AZIRIDINE DERIVATIVES

Haakon Haugen, Beacon, and James G. Dadura, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed May 13, 1971, Ser. No. 143,185

Int. Cl. C10m *1/48*

U.S. Cl. 252—46.7 7 Claims

An aziridine detergent-dispersant derivative, lube oil compositions containing said derivative, and manufacture thereof, said derivative being the reaction product of an aziridine of the formula:

where R is hydrogen or ω-aminoalkyl of from 1 to 5 carbons and a monoethoxylated hydrolyzed polyalkene-P_2S_5 reactant, said derivative prepared by:

(a) first contacting an aliphatic polyalkene of an average molecular weight of between about 50 and 5000 with P_2S_5 in the presence of sulfur at a first elevated temperature,

(b) second contacting the resulting polyalkene-P_2S_5 reaction product with steam at a second elevated temperature,

(c) removing inorganic phosphorus acid from the steam treated (hydrolyzed) polyalkene-P_2S_5 reaction product,

(d) third contacting the inorganic acid free, steam treated polyalkene-P_2S_5 reaction product with ethylene oxide at a third elevated temperature in a mole ratio of said inorganic acid free, steam treated P_2S_5-polyalkene reaction product to said ethylene oxide of between about 1:1 and 1:1.5 to form said monoethoxylated reactant,

(e) fourth contacting the ethoxylated derivative with said aziridine at a fourth elevated temperature utilizing a mole ratio of said derivative to said aziridine of between about 3:1 and 1:2 to form said detergent-dispersant derivative.

3,753,908

OXIDATION INHIBITED LUBRICATING OIL COMPOSITIONS WITH EXTREME PRESSURE PROPERTIES

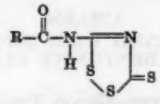
Louis de Vries, Greenbrae, and Brian R. Kennedy, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,292

Int. Cl. C10m *1/38*

U.S. Cl. 252—47.5 **5 Claims**

Amido-substituted dithiazole-thiones are oxidation inhibitors for lubricating oils and impart extreme pressure properties. Said compounds having the structural formula:



wherein R is a hydrocarbyl group of at least 8 carbon atoms.

3,753,909

XEROGRAPHIC TONER COMPOSITION

Lauren L. Hulse, Saratoga, William K. Carlton, San Jose, and Elinor J. Tanck, Cupertino, Calif., assignors to Memorex Corporation

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,696

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 **1 Claim**

A xerographic toner composition consisting essentially of finely divided resin particles produced by copolymerizing a mixture of two parts by weight of n-butylmethacrylate, 1.8–2.2 parts by weight styrene and 0.8–1.2 parts by weight of methylmethacrylate having finely divided carbon black intimately dispersed in the resin particles. Carbon black is dispersed in the resin particles in amount sufficient to give the resin-carbon black mixture a carbon black content in the range 12% to 18% by weight.

3,753,910

ELECTROPHOTOGRAPHIC DRY TONER

Yoshinaga Mitsuhashi and Motoki Kojima, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 10, 1971, Ser. No. 170,665

Claims priority, application Japan, Aug. 15, 1970, 45/71,161

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 **5 Claims**

An electrophotographic dry toner which contains as a resin component a mixture comprising a solid epoxy resin as a main component and 2.5 to 25% by weight, based on the weight of said epoxy resin, of a polyvinyl acetal resin compatible with said epoxy resin. The toner is particularly applicable in transfer type printing.

3,753,911

HIGH STRENGTH BARIUM TITANATE CERAMIC BODIES

Basil E. Walker, Jr., Oxon Hill, Md., and J. Richard Spann, McLean, and Roy W. Rice, Alexandria, Va., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed June 24, 1971, Ser. No. 156,493

Int. Cl. C04b *35/46*

U.S. Cl. 252—62.9 **5 Claims**

The mechanical strength and densification of barium titanate ceramic bodies are enhanced by the addition of small amounts of halide salts in combination with metal oxides. Transparency of barium titanate bodies are also attained by the addition of an alkali fluoride.

3,753,912

FUNCTIONAL FLUIDS CONTAINING MORPHOLINE-INITIATED POLYGLYCOL CORROSION INHIBITORS

Robert J. Nankee and Robert Carswell, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of abandoned application Ser. No. 829,790, June 2, 1969. This application Oct. 7, 1971, Ser. No. 187,534

Int. Cl. C09k *3/02*

U.S. Cl. 252—77 **5 Claims**

The invention is novel functional fluids containing a small but effective amount of morpholine-initiated polyglycol to inhibit corrosion of metals in contact with such functional fluids.

3,753,913

POLYCARBOXYLIC THIOETHER DETERGENT BUILDERS

Wadym Jarowenko, Plainfield, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed June 24, 1971, Ser. No. 156,525

Int. Cl. C11d *1/06*

U.S. Cl. 252—89 **5 Claims**

Novel builders for use in synthetic detergent compositions, said builders comprising polycarboxylic thioethers and their alkali metal salts.

3,753,914

SYNERGISTIC BLEACHING TEXTILE TREATING COMPOSITIONS WITH AN ANTIMICROBIAL ACTION

Peter Berth, Leichlingen, Horst Bellinger, Dusseldorf, and Klaus Hachmann, Hilden, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Aug. 5, 1971, Ser. No. 169,557

Claims priority, application Germany, Aug. 8, 1970, P 20 39 450.7

Int. Cl. C11d *7/54;* **D06l** *3/02*

U.S. Cl. 252—95 **23 Claims**

A synergistic bleaching textile treating composition with an antimicrobial action comprising (a) an optionally substituted 2-hydroxydiphenylether, (b) a per-compound yielding H_2O_2 in water, and (c) an activator for active oxygen. The composition can be utilized alone in aqueous solution or in combination with other customary components of textile treating compositions. The bleaching and antimicrobial action of the compositions is effective at temperatures down to room temperature.

3,753,915

BIOLOGICAL CLEANING PREPARATION

Yvon Demangeon, Ermont, France, assignor to Colgate-Palmolive Co., New York, N.Y.

No Drawing. Filed Apr. 16, 1971, Ser. No. 134,893

Int. Cl. C11d *7/54*

U.S. Cl. 252—95 **3 Claims**

A biological cleaning preparation containing a proteolytic enzyme and a salt of an organic hydroperoxide.

3,753,916

DETERGENT COMPOSITIONS CONTAINING PARTICLE DEPOSITION ENHANCING AGENTS

John J. Parran, Jr., Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Sept. 27, 1967, Ser. No. 671,117. Divided and this application Mar. 11, 1971, Ser. No. 123,454

Int. Cl. C11d *9/50, 1/62*

U.S. Cl. 252—107 **5 Claims**

Detergent compositions containing water-insoluble particulate substances, such as antimicrobial agents, and cer-

tain cationic polymers which serve to enhance the deposition and retention of such particulate substances on surfaces washed with the detergent composition.

3,753,917

CURING AGENT FOR EPOXY RESINS TO IMPART EXCELLENT SOLVENT RESISTANCE

Johannes Spoelder, Au, Switzerland, and Max Schonbachler, Johannesburg, Transvaal, Republic of South Africa, assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 26, 1971, Ser. No. 147,245

Int. Cl. C08g *51/84*

U.S. Cl. 252—182 1 Claim

As a curing agent for epoxy resin, a blend of an aromatic diamine and an aralkanol, such as benzyl alcohol, with viscosity increased and cross-linking of finished product enhanced by an epoxy novolac, accelerated by an aromatic acid such as salicylic acid. When mixed with a liquid polyepoxide, the curing agent gives prompt cure to a finished product having excellent solvent resistance.

3,753,918

SOLUTION OF ALKALI METAL TRITHIOCARBONATE IN DIMETHYL SULFOXIDE

Rudiger D. Haugwitz, Highland Park, N.J., assignor to Olin Corporation

No Drawing. Original application Jan. 27, 1970, Ser. No. 6,300, now Patent No. 3,660,412. Divided and this application Mar. 21, 1972, Ser. No. 236,787

Int. Cl. C01b *31/26*

U.S. Cl. 252—182 2 Claims

Carbon bisulfide is reacted with alkali metal hydroxide in dimethyl sulfoxide to form a solution of alkali metal trithiocarbonate.

3,753,919

LIGHT SOURCE COMPRISING PERAMINOETHYLENES ON POROUS PARTICULATE SUPPORTS

Edward T. Cline, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 28, 1964, Ser. No. 421,729

Int. Cl. C09k *3/00*

U.S. Cl. 252—188.3 11 Claims

Oxyluminescent light sources of some renewability comprising inert, solid, particulate supports capable of being crushed underfoot and of about 0.05–0.5 inch average particle size, e.g., vermiculite or urethane foam, impregnated with a tetrakis(disubstituted-amino)ethylene, e.g., tetrakis(dimethylamino)ethylene.

3,753,920

FLUORIDE REPROCESSING OF BREEDER FUELS

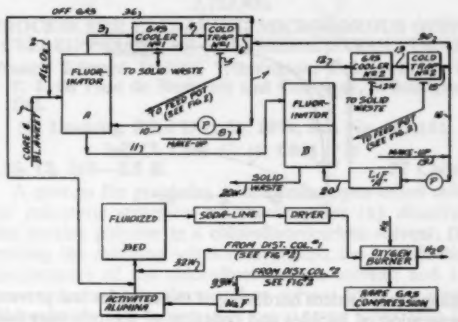
Louis J. Anastasia, Midlothian, Erwin L. Carls, Glen Ellyn, Albert A. Chilenskas, Chicago, Johan E. A. Graae, and Albert A. Jonke, Elmhurst, Norman M. Levitz, Bellwood, Martin J. Steindler, Park Forest, and La Verne E. Trevorrow, Glen Ellyn, Ill., assignors to the United States of America as represented by the United States Atomic Energy Commission

Continuation of abandoned application Ser. No. 770,145, Oct. 24, 1968. This application Aug. 12, 1971, Ser. No. 171,315

Int. Cl. C01g *43/06*

U.S. Cl. 252—301.1 R 2 Claims

Spent fuel oxides are fluorinated to produce a plutonium-rich stream and a uranium-rich stream. Each stream is cold trapped to remove high boiling fission products and fed to a thermal decomposer, via a common feed pot which acts as a batch distiller. From the thermal decomposer, a plutonium-rich stream is cold trapped and sent to a converter and a uranium-rich stream is purified by means of various traps and distillation columns and sent to the converter. In the converter, the uranium-rich stream and plutonium-rich stream are combined and converted to mixed oxides.



3,753,921

NOVEL DAYLIGHT FLUORESCENT PIGMENTS AND PROCESS FOR PREPARING THEM

Siegfried Noetzel, Mainz, and Edgar Fischer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,306

Claims priority, application Germany, Feb. 2, 1971, P 21 04 719.8

Int. Cl. C09k *1/02*

U.S. Cl. 252—301.2 R 7 Claims

New daylight fluorescent pigments which contain an organic fluorescent dyestuff and as resin a condensation resin, consisting of copolymerizates of olefinically unsaturated compounds containing epoxy groups and hence copolymerizable vinyl compounds which are cross-linked with di- or polycarboxylic acids or the anhydrides thereof and a process for their preparation which comprises incorporating the organic fluorescent dyestuff into the condensation resin.

These daylight fluorescent pigments may be employed for preparing fluorescent paints, for example air-drying lacquers on the basis of alkyl resin or physically drying lacquers on the basis of acrylic resins, as well as for preparing fluorescent printing inks such as inks for screen printing, intaglio printing, book printing and offset-litho printing.

Due to their high resistance to heat, they are particularly suitable for fluorescent dyeing of plastics and enamels.

3,753,922

PRODUCTION OF MICROCAPSULES

Yukio Shimosaka and Hiroshi Suzuki, Saidaiji, Japan, assignors to Japan Exlan Company Limited

Filed Oct. 1, 1971, Ser. No. 185,659

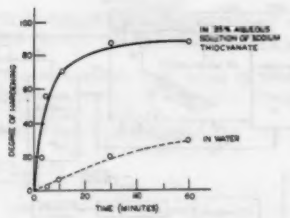
Claims priority, application Japan, Oct. 6, 1970, 45/87,771

Int. Cl. B01j *13/02*; B44d *1/02*

U.S. Cl. 252—316 3 Claims

Microcapsules are formed by dispersing a hydrophobic material, such as an ink, in an aqueous solution of a

thiocyanate containing a gellable hydrophilic colloid material, such as a protein, dissolved therein. The use of the



thiocyanate hastens hardening of the capsules and prevents generation of bubbles and cohesion of the microcapsules.

3,753,923

MANUFACTURE OF EXPANDED VERMICULITE EMPLOYING A UREA COMPOUND AND LOW TEMPERATURES

Takeo Wada, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,448
Claims priority, application Japan, Oct. 12, 1970, 45/89,919
Int. Cl. C04b *2/02*
U.S. Cl. 252—378 R 10 Claims

Expanded vermiculite is prepared by a process comprising impregnating vermiculite with at least a urea compound selected from the group consisting of urea and thiourea and heating the resulting composition at a temperature not lower than the decomposition point of the urea compound in the composition. The expanded vermiculite has desirable properties and is used in widely varied industrial application.

3,753,924

RUST INHIBITOR CONTAINING TANNINS WITH A CHELATION CATALYST AND A CROSS-LINKING AGENT

Rene P. Franiau, Wetteren, Belgium, assignor to S.A. PRB Societe Anonyme, Brussels, Belgium

No Drawing. Filed Sept. 16, 1970, Ser. No. 73,179
Claims priority, application Belgium, Jan. 27, 1970, 49,855
Int. Cl. C23f *11/18, 11/14, 11/10*
U.S. Cl. 252—389 R 9 Claims

The invention pertains to a rust inhibitor consisting of tannic acid and additives, said inhibitor comprising at least a tannic acid, a catalyst capable of initiating the chelation of iron atoms and a cross-linking agent.

3,753,925

CEREBROSPINAL FLUID CONTROL STANDARD

Allan L. Louderback, Temple City, and Anthony J. Fontana, Glendora, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,905
Int. Cl. G01n *31/00*
U.S. Cl. 252—408 3 Claims

A synthetic control standard for the determination of cerebrospinal fluid constituents is provided by diluting normal blood serum with an aqueous solution of glucose and saline to a total protein concentration of 30 to 145 mg. per 100 ml.

3,753,926

REGENERATION OF A COKE-DEACTIVATED CATALYST COMPRISING A COMBINATION OF PLATINUM, RHENIUM, AND HALOGEN WITH A POROUS CARRIER MATERIAL

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 805,380, Mar. 7, 1969. This application Mar. 8, 1971, Ser. No. 122,149
Int. Cl. B01j *11/08*; C10g *35/06*
U.S. Cl. 252—415 26 Claims

A deactivated hydrocarbon conversion catalyst, which is a combination of a platinum group component, a rhenium component, and a halogen component with a porous carrier material and which has been deactivated by deposition of carbonaceous materials thereon during a previous contacting with a hydrocarbon charge stock at an elevated temperature, is regenerated by the sequential steps of: (1) burning carbon therefrom at a relatively low temperature with a gas stream containing halogen or a halogen-containing compound, H_2O, and a relatively small amount of O_2, (2) treating the resulting partially regenerated catalyst at a relatively higher temperature with a gas stream containing a halogen or a halogen-containing compound, H_2O, and a relatively higher amount of O_2, (3) purging O_2 and H_2O from contact with the resulting catalyst, and, (4) subjecting the resulting catalyst to contact with a dry hydrogen stream. Key features of the disclosed method are: (1) presence of water and halogen in the gas stream used in the carbon-burning step and in the oxygen-treating step, (2) careful control of the temperature during each step, (3) maintenance of the halogen content of the catalyst at a relatively high level during the entire regeneration procedure, and (4) careful control over the composition of the gas streams used in the various steps thereof.

3,753,927

DICYCLOPENTADIENYL IRON COMPOSITIONS AND METHODS FOR CURING POLYESTER RESINS

John J. Kracklauer, Boulder, Colo., assignor to Syntex Corporation, Apartado, Panama

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,243
Int. Cl. C08g *17/10, 17/12*
U.S. Cl. 252—428 7 Claims

Novel compositions and methods employing same are discussed as useful in the peroxide induced cure of polyester resins. The compositions and methods employ a new promoter system having, as a principal component, a monosubstituted dicyclopentadienyl iron compound, wherein the substituent is a carbonyl containing substituent, e.g. acetyl, and, as second components, a member(s) selected from an exemplified group including various phosphorous compounds, an ascorbic acid compound, a stannous salt or soap, or an ammonium or alkali metal hydrogen sulfite.

3,753,928

CATALYST FOR THE PREPARATION OF TRANS-POLYPENTENAMERS

Nikolaus Schon, and Gottfried Pampus, Leverkusen, Josef Witte, Cologne, and Dieter Theisen, Remscheid, Germany, assignors to Bayer Aktiengesellschaft

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,763
Claims priority, application Germany, Feb. 14, 1970, P 20 06 776.9
Int. Cl. C08f *5/00*
U.S. Cl. 252—429 B 6 Claims

Process for the ring opening polymerisation of cyclomonoolefins by contacting the cyclomonoolefins with a catalyst consisting of

(a) a reaction product of a tungsten or tantalum halide with an acetal and

(b) an organo compound of a metal of groups *Ia* to IV*a* of the Periodic Table

the molar ratio of tungsten:metal of groups I*a* to IV*a* being from 1:0.3 to 1:10 and the molar ratio of tantalum: metal of groups I*a* to IV*a* being from 1:1 to 1:10.

3,753,929

STRIKE INCORPORATION OF MOLECULAR SIEVES FOR FLUID CRACKING CATALYSTS

John Francis Lindsley, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Sept. 16, 1970, Ser. No. 72,862
Int. Cl. B01j *11/36, 11/40*
U.S. Cl. 252—451 10 Claims

A process for preparing an improved aluminosilicate-containing silica-alumina hydrocarbon cracking catalyst comprising adding an alkali metal silicate to a mineral acid until the pH is above 3.5, dispersing a calcined crystalline aluminosilicate in the silica sol, continuing the addition of alkali metal silicate until gelation occurs, aging the gel, thereafter adjusting the pH of the gel to 3.0 with an aluminum salt, coating the aluminosilicate-silica substrate, washing at a pH of 4.0, then washing with ammonia at a pH of about 7.0, and drying the formed product.

3,753,930

PROCESS FOR PREPARING SPRAY-DRIED BLENDED DETERGENTS

Helmut H. Weldes, Havertown, Walter L. Schleyer, Swarthmore, and Eric W. Vessey, Springfield, Pa., assignors of Philadelphia Quartz Company, Philadelphia, Pa.

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,841
Int. Cl. C11d *1/22, 3/08, 3/30*
U.S. Cl. 252—527 1 Claim

Improved detergent compositions are prepared by addition of a portion of the total formulation to the remainder of the ingredients after these have been spray dried. Specifically it has been found that blending composites of hydrated alkali metal silicate glass and sequestering agents with the spray dried granules of the other detergent ingredients yield formulations with improved properties. Compared with conventional spray drying of complete detergent compositions, this process allows more uniform distribution of minor components throughout the formulation, higher alkali metal silicate levels, and decreases or even eliminates the formation of insolubles. An additional advantage of this process is that it permits increased production rates.

3,753,931

POLYETHER AMINES, THEIR PRODUCTION AND USE

Giuseppe Raspanti, Neuallschwil, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed May 28, 1971, Ser. No. 148,148
Claims priority, application Switzerland, June 5, 1970, 8,456/70
Int. Cl. C08j *1/46*
U.S. Cl. 260—2 BP 19 Claims

This invention is directed to new, water soluble, high molecular polyetheramines and their salts, produced by the reaction, in excess, of aliphatic polyamines which contain at least one primary or two secondary amino groups, may contain hydroxyl groups and have molecular weights not greater than 200, with polyepihalogenohydrins which contain 3 to 25 halogenomethyl groups, followed by removal of the excess polyamine from the reaction mixture by distillation, reaction of the resulting polyetheramine aqueous solution with crosslinking agents to a degree of crosslinking at which a viscosity increase occurs and the reaction mixture remains water soluble, and if desired partial or complete conversion of the free amino groups into their salts by the addition of acids. These new polyamines are useful as flocculating and flotation agents and as drainage and retention aids, especially in paper manufacture.

3,753,932

PROCESS FOR PREPARING MICROPOROUS OPEN-CELLED CELLULAR POLYMERIC STRUCTURES

Francis Edward Jenkins, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,181
Int. Cl. C08f *47/10;* C08j *1/26*
U.S. Cl. 260—2.5 R 37 Claims

A process for preparing microporous open-celled cellular polymeric structures which comprises (a) dissolving the starting polymer in a chlorofluorocarbon solvent; (b) cooling the resulting solution to at least the solidification temperature of the chlorofluorocarbon solvent; and (c) removing the chlorofluorocarbon solvent from the solidified solution at a temperature equal to or lower than the solidification temperature of said chlorofluorocarbon.

3,753,933

POLYURETHANE FOAMS FROM SOLID FOAMING AGENTS

Franciszek Olstowski, Freeport, and Donald B. Parrish, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 24, 1972, Ser. No. 247,030
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AE 12 Claims

Polyurethane foams are prepared from a polyol and an organic polyisocyanate employing as the foaming agent a solid particulate substance having a decomposition or dehydration temperature above about 250° C., a minimum dimension particle size of less than 2 millimeters, and a surface area of at least 0.2 square meters per gram. Such foaming agents include metal powders, organic polymer powders and inorganic compounds.

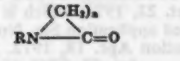
3,753,934

PROCESS FOR THE MANUFACTURE OF NEW PLASTICISED MELAMINE-FORMALDEHYDE CONDENSATES

Hermann Diethelm, Aesch Basel-Land, and Roman Gattlen, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,092
Claims priority, application Switzerland, Sept. 7, 1970, 13,322/70
Int. Cl. C08g *9/30*
U.S. Cl. 260—17.3 14 Claims

A process for the manufacture of new plasticised melamine-formaldehyde condensates by condensing melamine with formaldehyde in an aqueous medium with simultaneous or subsequent addition of a lactam of the Formula I



(I)

(in which R stands for hydrogen or an alkyl group containing 1 to 4 carbon atoms and *n* is a digit from 3 to 11, both inclusive) and of a sugar, the proportion of the lactam and of the sugar together being 3 to 15% by weight and the proportion of sugar alone being at least 1.5 and at most 7.5% of the weight of the mixture of melamine and formaldehyde, and new plasticised melamine-formaldehyde condensates obtained by the said process.

It is preferable to condense melamine with formaldehyde in an aqueous medium in the presence of both a lactam of the Formula I and of a sugar.

3,753,935
NONYELLOWING ACRYLIC ENAMEL CONTAINING AN ACID PHOSPHATE CATALYST
Lester I. Miller, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 157,664, June 28, 1971. This application June 30, 1972, Ser. No. 268,047
Int. Cl. C08f *21/04;* C08g *17/16;* C09d *3/66*
U.S. Cl. 260—22 CA 11 Claims

An improved acrylic enamel that does not yellow on curing at elevated temperatures and has as the film-forming binder a blend of (1) an acrylic polymer that contains in the backbone a vinyl oxazoline ester and (2) an alkyd resin and contains in combination therewith an acid phosphate catalyst; the enamel is useful as an exterior finish for motor vehicles and is particularly useful for repairing damaged finishes of automobiles and trucks.

3,753,936
BRANCHED RUBBERY BLOCK COPOLYMER ADHESIVE
Oren L. Marrs, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Continuation-in-part of abandoned application Ser. No. 12,452, Feb. 18, 1970. This application July 14, 1971, Ser. No. 162,684
Int. Cl. C09j *3/26*
U.S. Cl. 260—27 R 12 Claims

A pressure-sensitive adhesive suitable for application in the form of a solution, dispersion, or emulsion is provided which comprises, as the sole rubbery polymer present in the formulation, a branched rubbery block copolymer of conjugated dienes and vinyl aromatic hydrocarbons, having terminal resinous blocks, and a conjugated diene/vinyl aromatic hydrocarbon ratio range of from 60/40 to 80/20.

3,753,937
PERFLUORO OLEFIN VINYLIDENE FLUORIDE ELASTOMER
David A. Stivers, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed June 8, 1971, Ser. No. 151,128
Int. Cl. C08f *45/36*
U.S. Cl. 260—28.5 D 2 Claims

Fluoro-olefinic elastomers of greatly improved processing characteristics are obtained by the inclusion of a minor amount of at least one high boiling high molecular weight ester containing one or more fatty acids and one or more alcohols, as a lubricity, softening and plasticizing aid.

3,753,938
THERMOPLASTIC SHEET MATERIAL
Raymond Montague Edwards, 31 Mount Pleasant Road, Chigwell, and Patrick Joseph Tierney, 34 Gloucester Road, New Barnet, England
No Drawing. Continuation-in-part of application Ser. No. 191,832, Oct. 22, 1971, which is a continuation-in-part of abandoned application Ser. No. 6,597, Jan. 28, 1970. This application Apr. 18, 1972, Ser. No. 245,259
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 D 17 Claims

A flexible waterproof sheet material is made by forming a uniform mixture of calenderable consistency containing hard bitumen of softening point at least 70° C., a compatible synthetic elastomer which constitutes a maximum of 50% by weight of the mixture, and non-fibrous and fibrous reinforcing filler, and calendering the mixture to form a sheet of uniform composition.

3,753,939
STABILIZATION OF ACRYLAMIDE POLYMERS WITH THIOSULFATES
Hans S. Von Euler-Chelpin, Sundsvall, Sweden, assignor to Kemanord AB, Stockholm, Sweden
No Drawing. Filed Feb. 16, 1971, Ser. No. 115,893
Int. Cl. C08f *29/00*
U.S. Cl. 260—29.6 Z 9 Claims

Compositions comprising water-soluble acrylamide polymer and water-soluble thiosulfate are provided. The thiosulfate improves the stability of the polymers against thermal and oxidative degradation.

3,753,940
METHOD FOR PREPARING VINYLIDENE CHLORIDE COPOLYMER LATEX COATING COMPOSITIONS
Alex Trofimow, Brookline, and Norbert K. Mader, Wilmington, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.
No Drawing. Filed May 18, 1971, Ser. No. 144,641
Int. Cl. C08f *1/13*
U.S. Cl. 260—29.6 RW 7 Claims

Vinylidene chloride copolymer latex coating compositions containing carboxylic acid comonomer and exhibiting improved adhesion qualities to difficultly-adherable substrates such as nylon, are prepared by regulating the addition of the acid comonomer to the polymerization zone.

3,753,941
LATEX COMPOSITION
Fred N. Teumac, South Bend, Ind., and Charles D. Cline, Charlotte, N.C., assignors to Story Chemical Corporation, Athens, Ga.
No Drawing. Continuation-in-part of abandoned application Ser. No. 698,440, Jan. 17, 1968. This application July 28, 1971, Ser. No. 166,976
Int. Cl. C08d *7/02;* C08f *37/00*
U.S. Cl. 260—29.7 N 7 Claims

A latex composition including an aqueous dispersion of carboxylated polymer containing a small proportion of a carboxylic acid, and a small proportion of an aziridinyl compound which reacts with carboxyl groups of the polymer upon curing to effect polymer cross-linking and thereby provide enhanced tensile strength, loading capacity, and insolubility characteristics in the cured product. It is a suitable treatment for textile, non-wovens, papers and other related products. The aziridinyl compound may be an aziridinyl azine such as triethylene melamine, proportioned at 1 part per 2 parts of carboxylic acid, such as fumaric acid, up to a triethylene melamine content of 1 part per 100 parts of polymer. The composition may advantageously contain a substantial quantity of filter material, such as clay or Whiting in an amount equivalent to 100 to 300 or more parts per 100 parts polymer for enhanced dimensional stability, stiffness and coating thickness.

3,753,942
POLY(VINYLIDENE FLUORIDE) COMPOSITIONS
Edward E. Moran, Worthington, Ohio, and Jeffrey J. Wine, Los Angeles, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Sept. 6, 1968, Ser. No. 758,130
Int. Cl. C08f *45/34, 45/36, 45/44*
U.S. Cl. 260—30.2 13 Claims

Compositions comprising poly(vinylidene fluoride) in a solvent mixture containing 10 to 70 percent of 2-pyrrolidone have unique properties including the ability to form continuous films of excellent adhesion by baking at relatively low temperatures, even when the poly(vinylidene fluoride) is the only resinous component present in the composition. The solvent mixture preferably includes an ester and a ketone.

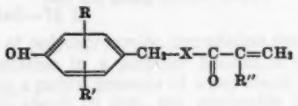
3,753,943

1,2-POLYBUTADIENE COMPOSITION STABILIZED WITH PHENOLIC ACRYLATES OR ACRYLAMIDES

Haruo Ueno, Hideo Ishikawa, and Hisawaki Hamada, Ichihara, and Takashi Watanabe, and Kunio Imamora, Tokyo, Japan, assignors to UBE Industries, Ltd., and Ouchishinko Chemical Industrial Company, Tokyo, Japan

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,596
Claims priority, application Japan, Dec. 26, 1970, 45/118,731
Int. Cl. C07c *107/30*
U.S. Cl. 260—32.6 A 9 Claims

It has been found that undesired deterioration of 1,2-polybutadiene under the influence of heat, oxygen, ozone and light can be advantageously prevented by the incorporation into 1,2-polybutadiene of a small amount of a compound represented by the formula:



(I)

wherein X is a —OCH_2NH—, —NH— or —O— group, each of R and R′ is an alkyl group having 1 to 4 carbon atoms and R″ is a hydrogen atom or a methyl group.

3,753,944

WATER-SOLUBLE HOT MELT ADHESIVE

Julius Sirota, South Plainfield, and Gerald T. Gargiulo, Piscataway, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed June 16, 1971, Ser. No. 153,823
Int. Cl. C08g *51/34*
U.S. Cl. 260—33.2 R 6 Claims

A water-soluble hot melt adhesive is disclosed suitable for use as a pick-up or tail tie adhesive for wound paper webs, said adhesive comprising a poly(ethylene oxide) of molecular weight 15,000 to 50,000, a water-soluble poly-(alkylene oxide) or derivatives thereof of molecular weight 190 to 15,000 and optionally, inert fillers and dyes.

3,753,945

STABILIZED COMPOSITIONS

Eduard K. Kleiner, Dobbs Ferry, N.Y., assignor to Ciba-Geigy Corporation

No Drawing. Original application Jan. 31, 1969, Ser. No. 795,696, now Patent No. 3,639,538, dated Feb. 1, 1972. Divided and this application Mar. 12, 1971, Ser. No. 123,819
Int. Cl. C08f *45/58*; C08g *51/58*
U.S. Cl. 260—45.85 H 8 Claims

Organic materials, particularly synthetic polymers such as polypropylene, are protected against oxidation in air, thermal degradation or deterioration by including, in such substances, a stabilizing amount of an antioxidant. The antioxidant is obtained by reacting (a) an α,β-unsaturated ester of a hindered hyroquinone and (b) a phosphinodithioic acid or a O,O-diester of phosphorothiolothionic acid.

3,753,946

CURABLE POLYARYLENEOXIDE COMPOSITIONS

Fred F. Holub, Schenectady, and Carl M. Emerick, Mechanicville, N.Y., assignors to General Electric Company

No Drawing. Original application July 1, 1969, Ser. No. 838,316. Divided and this application Apr. 30, 1971, Ser. No. 139,211
Int. Cl. C08f *7/02, 27/08*
U.S. Cl. 260—47 CZ 10 Claims

Polyaryleneoxide having at least one chemically combined aliphatically unsaturated imido radical is provided and a method for making such materials. Blends of the imido-substituted polyaryleneoxide and a variety of aliphatically unsaturated organic monomers, such as styrene, diallylphthalate, N-phenylmaleimide, or organic polymers such as polystyrene, polysulfone, polycarbonate, polyphenyleneoxides, etc., also are provided. The imido-substituted compositions of the present invention can be employed as coatings, varnishes, injection molding compounds, laminating compounds, etc.

3,753,947

METHOD OF CURING POLYEPOXIDE COMPOSITIONS USING BF_3·2-ETHYL-2-OXAZOLINE AS A NORMALLY LIQUID CURING AGENT

Robert J. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 137,619, Apr. 26, 1971. This application Feb. 28, 1972, Ser. No. 230,095
Int. Cl. C08g *30/16*
U.S. Cl. 260—47 EN 9 Claims

This invention relates to an improved process for curing polyepoxide compositions by utilization of BF_3·2-ethyl-2-oxazoline as a normally liquid curing agent which is capable of forming substantially homogeneous solutions of said polyepoxide compositions at low temperatures and wherein such solutions are rapidly curable to high strength materials.

3,753,948

PREPARATION OF POLYAMIC ACIDS IN KETONE SOLVENTS

George L. Brode, Somerville, and James H. Kawakami, Piscataway, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed June 9, 1971, Ser. No. 151,597
Int. Cl. C08g *20/32*
U.S. Cl. 260—49 7 Claims

Polyamic acids have been prepared by the interfacial polymerization of trimellitoyl chloride with sulfone ether diamines by adding a ketone solution of the former to the diamine dispersed in water containing an HCl scavenger with shearing agitation. The polymerization proceeds rapidly and the product polyamic-acid can be recovered directly from the reaction mixture in which it is insoluble. The polyamic-acid can then be thermally or chemically dehydrated to the corresponding polyamide-imide.

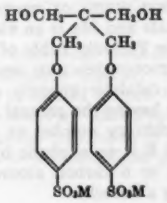
3,753,949

POLYESTERS WITH IMPROVED DYEABILITY

Gene Clyde Weedon, Richmond, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Nov. 16, 1971, Ser. No. 199,353
Int. Cl. C08g *17/14*
U.S. Cl. 260—49 5 Claims

Cationic dyeable linear polyesters useful for making films and filaments having incorporated therein, based on the total amount of the glycol used in preparing said polyesters, from about 0.01 to about 15 mole percent of a sulfonate compound of the formula:



wherein M is selected from the group consisting of alkali metals and ammonium.

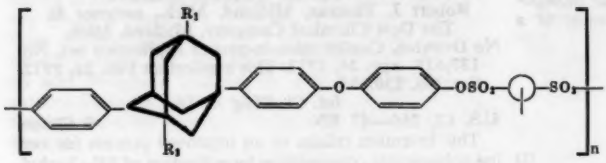
3,753,950

POLYSULFONATE POLYMERS FROM ADAMANTANE BISPHENOLS AND DISULFONYL CHLORIDES OF AROMATIC SUBSTITUTED ETHERS

Robert M. Thompson, Wilmington, Del., and Irl N. Duling, West Chester, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,408
Int. Cl. C08g 17/08, 17/13
U.S. Cl. 260—49 6 Claims

Novel solid polysulfonates having the structure:



where R_1 and R_2 are hydrogen or hydrocarbyl radical having 1 to 20 carbon atoms, Q represents a divalent aromatic substituted ether radical having 6 to 20 carbon atoms, and *n* represents the number of such repeating units which are produced. These thermoplastic resins are valuable in the manufacture of molded and extruded articles.

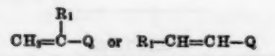
3,753,951

METHOD FOR PRODUCING ALTERNATIVE COPOLYMERS CONTAINING LITTLE GEL OF A CONJUGATED VINYL COMPOUND AND A CONJUGATED DIENE

Mituji Miyoshi, Kanagawa, and Kazuo Matsuura, Kawasaki, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Mar. 11, 1970, Ser. No. 18,591
Claims priority, application Japan, Mar. 12, 1969, 44/18,362; May 12, 1969, 44/35,706
Int. Cl. C08f 15/00, 15/02
U.S. Cl. 260—63 BB 5 Claims

Method for producing copolymers of a conjugated diene substituted or unsubstituted with halogens and a conjugated vinyl compound which comprises contacting (A) a conjugated diene or a halogen-containing conjugated diene and (B) a conjugated vinyl compound having the general formula



wherein R_1 is hydrogen, nonpolymerizable hydrocarbon or halogenated hydrocarbon radical containing from 1 to 20 carbon atoms, and Q is nitrile radical or the group

in which Y is a radical selected from the group consisting of ZH, ZR, ZMe, NR'R", halogens and hydrogen, Z being oxygen or sulfur atom, R being a hydrocarbon radical containing from 1 to 20 carbon atoms, R' and R" being the same or different hydrocarbon radicals containing up to six carbon atoms or morpholino, pyrolidino, or piperidino radicals and Me is an element belonging to Groups I–III of the Periodic Table of the elements indicated in terms of monovalency or ammonium radical in the presence of a catalytic quantity of an organic aluminium halogenide having the general formula $AlR_{3-n}X_n$ wherein *n* is an arbitrary number of the value $1 \leqq n < 3$, X is a halogen and R is an aliphatic hydrocarbon radical containing from 3 to 6 carbon atoms, a part of all of said radicals having a branch.

3,753,952

PHOTODEGRADABLE COMPOSITION

James Edwin Guillet, Don Mills, Ontario, Canada, assignor to The Governors of the University of Toronto, Toronto, Ontario, Canada

No Drawing. Continuation-in-part of abandoned application Ser. No. 763,980, Sept. 30, 1968. This application Apr. 19, 1971, Ser. No. 135,424
Claims priority, application Great Britain, Apr. 27, 1970, 20,101/70; May 14, 1970, 23,387/70
Int. Cl. C08f 15/12
U.S. Cl. 260—63 R 14 Claims

Plastics materials suitable for use in packaging are provided, which photodegrade upon exposure to direct sunlight, but which have indefinite storage life otherwise. The materials are polymers of common vinylidene monomers such as ethylene, styrene and methyl methacrylate, containing 0.1–5 mole percent of keto carbonyl groups located in side chains but adjacent the main chain of the polymer. These keto groups absorb U.V. radiation and cause photodegradation of the polymer.

3,753,953

HYDROLYSIS-RESISTANT POLYESTERURETHANE THREADS AND PREPARATION THEREOF

Cornelis Jan Leeuwerik, Velp, Franciscus Johannes Huntjens, Arnhem, and Cornelis Martinus Franciscus Vrouenraets, Dieren, Netherlands, assignors to AKZO N.V. Arnhem, Netherlands

No Drawing. Filed June 11, 1971, Ser. No. 152,389
Claims priority, application Netherlands, June 13, 1970, 7008680
Int. Cl. C08g 22/10
U.S. Cl. 260—75 NK 8 Claims

A method for producing polyester-urethane elastomer threads is disclosed wherein the polyester portion is formed by reacting adipic acid with 2,2,4-trimethylhexanediol-1,6 and/or 2,4,4-trimethylhexanediol-1,6. The resulting products have excellent mechanical properties and a very high hydrolytic stability.

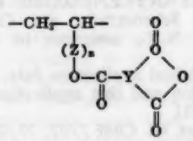
3,753,954

NOVEL COPOLYMERS AND PROCESS FOR THEIR PRODUCTION

Masahiko Ohmori, Iwakuni, Tosiharu Tomatu, Otake, and Tadao Iwata, and Juntaro Sasaki, Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,485
Claims priority, application Japan, Aug. 3, 1970, 45/67,918, 45/67,919
Int. Cl. C08f 27/00
U.S. Cl. 260—78.4 D 16 Claims

An olefin or vinylalcohol copolymer having a repeating unit of the formula



wherein Z is an alkylene group, arylene group or cycloalkylene group or a divalent hydrocarbon group of 1 to

20 carbon atoms consisting of a combination of these groups; n is 0 or 1; and Y is an aromatic hydrocarbon group, the two carbonyl groups being bonded to two adjacent carbon atoms of the aromatic hydrocarbon group or to two carbon atoms in peri-position to each other, and a process for the production thereof.

3,753,955

CONTROL OF VISCOSITY AND POLYCAPROAMIDE DEGRADATION DURING VACUUM POLYCONDENSATION

John Christopher Haylock, Richmond, and John Walter Wagner, Petersburg, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 200,027

Int. Cl. C08g *20/04, 20/14*

U.S. Cl. 260—78 L 3 Claims

Control of polycaproamide degradation during vacuum polycondensation in a polymer finisher is achieved by maintaining a partial pressure of water above the polymer melt above about 10 mm. Hg, preferably above about 30 mm. Hg, absolute pressure. Degradation is minimized to within 3, preferably 2 units of the theoretical difference between carboxyl and amine ends. The water extractables content of the polymer is also controlled to below about 3.5% by weight, preferably 2.5%; viscosity increase of the polymer melt levels out after less than 4 hours to less than 10 FAV units per hour, by means of the invention.

3,753,956

POLYACRYLIC ANHYDRIDE CONTAINING PENDANT TETRAZOLE MOIETY

Richard S. Tuites, Thomas E. Whiteley, and Louis M. Minsk, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Oct. 9, 1967, Ser. No. 673,914. Divided and this application Nov. 20, 1970, Ser. No. 91,575

Int. Cl. C08f *3/44, 3/64*

U.S. Cl. 260—78.4 R 1 Claim

Novel polymers comprising tetrazole moieties incorporated into the polymer chain or appended from the polymer backbone are disclosed. A photographic silver halide emulsion and a photographic element containing an antifoggant and fog stabilizing amount of polymer is disclosed.

3,753,957

PROCESS FOR PREPARING AROMATIC POLYAMIDES BY CONDENSATION OF AN AROMATIC ESTER OF AN AROMATIC AMINO ACID

Rufus Sidney Jones, Dover, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Dec. 9, 1971, Ser. No. 206,491

Int. Cl. C08g *20/00*

U.S. Cl. 260—78 A 13 Claims

High molecular weight aromatic linear polyamides of fiber-forming grade are prepared by condensation of monomeric aromatic esters of aromatic amino acid to form a solid oligomer, followed by subsequent solid state polymerization of the oligomer to produce high viscosity linear aromatic polyamide. The described process is particularly advantageous economically because of the high yield of fiber film and coating grade polymer coupled with the ability to recover the by-product for recycle to form the monomeric aromatic ester starting material.

3,753,958

PULVERISABLE ACRYLATE RESINS

Frank Wingler, Leverkusen, Josef Pedain, Cologne-Bucheim, Hansgunter Appel, Bergisch-Gladbach-Paffrath, and Herbert Bartl, Odenthal-Hahnenberg, Germany, assignors to Bayer Aktiengesellschaft

No Drawing. Continuation-in-part of abandoned application Ser. No. 69,129, Sept. 2, 1970. This application Dec. 13, 1971, Ser. No. 207,615

Claims priority, application Germany, Dec. 31, 1969, P 19 65 740.0

Int. Cl. C08f *1/04, 15/40*

U.S. Cl. 260—78.5 R 6 Claims

Copolymer of from 10 to 70 by weight of at least one ester of acrylic and/or methacrylic acid, 25 to 75% by weight of an optionally substituted styrene, vinyl ester or (meth) acrylonitrile, 5 to 50% by weight of at least one monomer from the group of α,β-mono-olefinically unsaturated carboxylic acid with 3 to 5 carbon atoms, hydroxyalkyl esters of the foregoing acids and amides and amides derivatives of acrylic and methacrylic acid which is pulverisable, has a softening range of from 75 to 110° C. and an average molecular weight of from about 500 to 10,000 and process of producing the same by mixing said components, bulk polymerizing in a first stage to a conversion of 70 to 90% with an initiator decomposing into radicals below 70° C. and finishing bulk polymerization in a second stage to a conversion of at least 95% with an initiator decomposing at from 120 to 170° C.

3,753,959

ALTERNATING COPOLYMERS

Mitsuo Ichikawa, Yasumasa Takeuchi, Yoshiyuki Harita, and Masayuki Endo, Yokkaichi-shi, Mie-ken, Nobuo Yamaguchi, Mie-gun, Mieken, Mitsuru Tashiro, and Akira Kogure, Yokkaichi-shi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,860

Int. Cl. C08f *1/56, 19/10*

U.S. Cl. 260—78.5 BB 32 Claims

The disclosure covers a novel process for making copolymers through the use of a novel combination of two catalyst components in particular an organo-aluminum compound and an organic compound having a labile halogen atom. The disclosure also covers novel alternate copolymers of conjugated dienes and conjugated heterodienes alone or together with monoolefines.

3,753,960

PREPARATION OF GEL-FREE EPDM BASED ON ETHYLIDENE NORBORNENE

Eliot K. Easterbrook, Naugatuck, and Ajab S. Malik, New Haven, Conn., assignors to Uniroyal, Inc.

No Drawing. Filed Aug. 31, 1967, Ser. No. 664,643

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 7 Claims

Build-up of gel, branching, cross-linking, and undesirable increases in Mooney viscosity, by post-polymerization side reactions in EPDM rubbed based on ethylidene norbornene, is prevented by adding to the polymerization reaction mixture, at the conclusion of the polymerization, a Lewis base such as polypropylene glycol or monoethanolamine.

3,753,961

RESINOUS COMPOSITION

David R. St. Cyr, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 855,759, Sept. 5, 1969. This application Dec. 3, 1971, Ser. No. 204,714

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 2 Claims

A resinous material, and method for its preparation, having a softening point of from about 70° C. to about 130° C. comprising from about 10 to about 80 percent units derived from vinyl toluene, from about 10 to about 80 percent units derived from α-methyl styrene, and from about 10 to about 50 percent units derived from styrene in which the mole ratio of vinyl toluene to styrene is from about 3/1 to about 1/1. The resinous material is prepared by polymerizing the monomers in the presence of an anhydrous catalyst selected from boron trifluoride, boron trifluoride etherate, aluminum chloride, ethyl aluminum dichloride and stannic chloride. The preferred catalyst is boron trifluoride. The resinous material of this invention has particular utility as resins for hot melt coatings and adhesives.

3,753,962

RECOVERY OF A WATER SOLUBLE POLYMER POWDER FROM AN AQUEOUS GEL OF SAID POLYMER

Alfred Joseph Restaino, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Continuation-in-part of applications Ser. Nos. 781,975, and 782,000, both dated Dec. 6, 1968, both now abandoned. This application Mar. 16, 1970, Ser. No. 20,154

Int. Cl. C08f *1/88*

U.S. Cl. 260—80 M 14 Claims

A process is described for the recovery of a high molecular weight polymer as a water-soluble powder from a stiff, rubber like aqueous gel of the polymer. The processing steps include: cutting the rubbery polymer gel, which is formed during the polymerization of the polymer, contacting the cut gel with a water miscible and polymer immiscible solvent causing a precipitate of the polymer to form, and then recovering the polymer precipitate by separation.

3,753,963

PROCESS FOR PRODUCING HIGH SOFTENING POINT HYDROCARBON RESIN HAVING GOOD SOLUBILITY

Hideo Hayashi, Kawasaki, Hisatake Sato, Yokohoma, Japan, assignors to Nippon Petrochemical Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,898

Claims priority, application Japan, Mar. 23, 1970, 45/23,904

Int. Cl. C08f *15/01, 15/42*

U.S. Cl. 260—82 6 Claims

A process for producing light colored aromatic hydrocarbon resins having high softening points of above 140° C., good solubility in hydrocarbon solvents and low bromine value, which comprises using a thermal cracked petroleum fraction having a boiling range of 140–220° C., below 7 wt. percent of styrene content, and above 5 wt. percent of total content of indene and its alkyl derivatives; polymerizing said fraction in the presence of a boron trifluoride type catalyst at a temperature between −30 to +40° C. within a period of 10 minutes to 15 hours under addition of phenol and/or alkylphenol; removing said catalyst after polymerization; and recovering said resin after separation of unpolymerized fraction and low molecular weight polymers from the resin-containing solution by evaporation or distillation.

3,753,964

POLYMERIZATION OF OLEFINS WITH TETRAKIS (BICYCLOHEPTYL)VANADIUM COMPOUNDS AS CATALYSTS

Wendell P. Long, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 112,020, Feb. 2, 1971. This application Dec. 8, 1971, Ser. No. 206,147

Int. Cl. C08f *15/04, 1/42*

U.S. Cl. 260—88.2 R 9 Claims

Tetrakis(1 - bicyclo - [2.2.1] - heptyl)vanadium compounds are catalysts for the polymerization of 1-olefins when activated by a halogen-containing aluminum compound such as $AlCl_3$ or an alkylaluminum halide.

3,753,965

METHOD FOR PRODUCING NON-BLOCKING ETHYLENE-ACRYLIC ACID COPOLYMER ARTICLES AND ARTICLES PRODUCED THEREBY

Glenwell Ray Looney and Mark Chung-Kong Hwu, St. Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,356

Int. Cl. C08f *15/04, 15/14*

U.S. Cl. 260—88.1 R 7 Claims

Ethylene-acrylic acid copolymers in particulate form, such as, chips, rods, etc., are surface treated with a base such as sodium hydroxide, ammonia or diethylamine to render the shaped articles less prone to blocking or sticking. The treatment converts the carboxyl groups on the surface to the salt form; up to about 2.5 weight percent of the total carboxyl groups in the copolymer are converted and the properties of the original polymer are not altered to any appreciable extent as indicated by melt index and stiffness measurements.

3,753,966

PROCESS FOR PREPARING POLYVINYL CHLORIDE BY SUSPENSION POLYMERIZATION

Shunichi Koyanagi, Hajime Kitamura, Kinya Ogawa, and Kenichi Taguchi, Naoetsu, Japan, assignors to Shinetsu Chemical Company

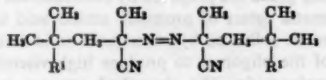
Filed Dec. 16, 1970, Ser. No. 98,667

Claims priority, application Japan, Dec. 23, 1969, 44/103,005; Dec. 29, 1969, 45/1,310

Int. Cl. C08f *3/22*

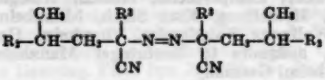
U.S. Cl. 260—92.8 W 6 Claims

The polymerization is conducted in the presence of a first catalyst having the formula:



wherein R^1 is a radical selected from the group consisting of alkyl, alkoxy and aryl radicals having from 1 to 6 car-

bon atoms, and a second catalyst selected from the group consisting of azonitriles having the formula:



wherein R^2 and R^3 are each an alkyl radical having from 1 to 4 carbon atoms, and oil-soluble organic peroxides which are soluble in vinyl chloride monomers. A polyvinyl chloride having superior thermal stability and a desirable particle size distribution is obtained quickly and at a high conversion rate. Additionally, polymer scale deposition on the inside wall of the polymerization vessel is reduced.

3,753,967

PROCESS OF PREPARING POLYMERS OF CONJUGATED DIENES

Renier J. L. Graff, Beek, and Adrianus G. Marchal, Stein, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Feb. 24, 1971, Ser. No. 118,564

Claims priority, application Netherlands, Feb. 27, 1970, 7002794

Int. Cl. C08d *3/04, 3/06*

U.S. Cl. 260—94.3 **7 Claims**

An improved process for polymerizing conjugated dienes in the presence of a catalyst comprising adding a metal containing Lewis acid to the reaction mixture to control the molecular weight of the polymer being produced.

3,753,968

SELECTIVE REACTION OF FATTY ACIDS AND THEIR SEPARATION

Benjamin F. Ward, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

No Drawing. Filed July 1, 1971, Ser. No. 159,070

Int. Cl. C09F *1/04*

U.S. Cl. 260—97.6 **4 Claims**

A process for making a dicarboxylic acid having 21 carbon atoms from fatty acids is accomplished by reacting the linoleic acid portion in a fatty acid mixture with up to 26% by weight of fatty acids of acrylic acid and with from 0.01% to 0.5% by weight of fatty acids of iodine catalyst at a temperature between 200° C. and 270° C. The fatty acid-dicarboxylic acid mixture is then separated by distilling into an oleic-type fatty acid and a C_{21} dicarboxylic acid. This process is especially applicable to separating tall oil fatty acids.

3,753,969

METHOD FOR SYNTHESIZING PYROGLUTAMYL-HISTIDYL-PROLINAMIDE

Karl Folkers, 6406 Mesa Drive, Austin, Tex., and Jan B. Boler, Oslo, Norway, and Jaw-Kang Chang, Austin, Tex., said Boler and Chang assignors to said Folkers

No Drawing. Filed Dec. 22, 1969, Ser. No. 887,432

Int. Cl. C07c *103/52;* **C07g** *7/00*

U.S. Cl. 260—112.5 **7 Claims**

A method for synthesizing a tripeptide, pyroglutamyl-histidyl-prolinamide, which has the same potent activity of the thyrotropin releasing hormone of the hypothalamus gland of mammals is provided by utilizing, as the starting materials, the amino acids, pyroglutamic acid, histidine and proline. Synthesis of the desired product is accomplished by coupling histidine with either pyroglutamic acid or proline and then coupling the resultant product with the remaining, uncoupled amino acid to obtain pyroglutamyl-histidyl-prolinamide.

3,753,970

CYCLOPEPTIDES DERIVED FROM POLYMYXINS AND THEIR PREPARATION

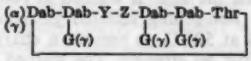
Jean Bouchaudon, Morsang-sur-Orge, Essonne, and Georges Jolles, Sceaux, Hauts-de-Seine, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Aug. 4, 1970, Ser. No. 60,944

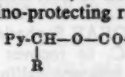
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*

U.S. Cl. 260—112.5 **5 Claims**

The new cyclopeptides of the formula:



in which Y—Z represents an amino acid chain selected from D-Leu-Thr, D-Phe-Leu, D-Leu-Leu and D-Leu-Ileu, G represents an amino-protecting radical of the formula:



in which Py represents pyridyl, pyridyl-N-oxide, or pyridyl or pyridyl-N-oxide carrying a methyl substituent, R represents hydrogen, alkyl of 1 to through 5 carbon atoms, or phenyl, and Dab represents α,γ-diaminobutyric acid, the amino acids having the L-configuration unless otherwise indicated, said cyclopeptides containing only a single free amino group, are useful intermediates for the synthesis of semi-synthetic products derived from polymyxins.

3,753,971

COMPOSITION AND PROCESS FOR CROSS-LINKING MACROMOLECULAR POLYSACCHARIDE SOLUTIONS

William C. Browning and Billy G. Chester, Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

Original application June 18, 1970, Ser. No. 47,325. Divided and this application Aug. 21, 1972, Ser. No. 282,375

Int. Cl. C07c *1/00*

U.S. Cl. 260—124 R **4 Claims**

A cross-linking agent for macromolecular polysaccharide materials consisting essentially of a chelating composition formed from (1) an organic polyelectrolyte ligand component, and (2) a component of a metal of the first series of the transition elements of the Periodic Table. This cross-linking agent has been found to provide enhanced rheological properties without obtaining metal ion overtreatment characteristics. In a preferred form, said cross-linking agent also includes a compound containing a metal from Group II of the Periodic Table. The cross-linked materials may be utilized in textile sizing agents, paints, drilling fluids, and the like.

3,753,972

FRACTIONATION OF AGAR

Wilfred Yaphe, and Michael Duckworth, Montreal, Quebec, Canada, assignors to Research Corporation, New York, N.Y.

No Drawing. Filed Apr. 28, 1970, Ser. No. 32,777

Int. Cl. C07c *47/18*

U.S. Cl. 260—209 R **14 Claims**

It has been determined that agar is a complex mixture of polysaccharides all with the same backbone of linkages but masked to a variable degree with charged groups. There are three extremes of structure in this spectrum of polysaccharides (1) completely neutral agarose, which is defined as a neutral, linear polymer with agarobiose as the repeating unit (2) pyruvated agarose in which masking of agarobiose units with charged groups gradually increases, the D-galactose being substituted by a 4,6-carboxyethylidene-D-galactose and the 3,6-anhydro-L-galactose residues with galactose sulfate (3) sulfated galactan in which the substitution

on the D-galactose units with pyruvate decreases and the concentration of L-galactose sulfate increases, yielding a non-gelling, sulfated polymer with no 3,6-anhydro-L-galactose.

Practically agarose is defined as that fraction of the complex of molecules in agar, with the lowest charge content and therefore greatest gelling ability. A highly purified agarose evidencing no detectable pyruvate and not more than 0.05% sulfate is prepared at yields of about 10–20% by fractionating purified agar. In the fractionation operations the agar is washed at room temperature to remove a non-gelling sulfated galactan. The agar is again washed at 50° C. to remove a charged component having very low gel strength. The washed agar may then be further purified by treatment with polyethylene glycol. The gelling components in the washed agar or the polyethylene precipitated agar are chromatographically fractionated, such as by DEAE Sephadex A–50, at a temperature of about 60° C. to recover a substantially pure agarose fraction and charged gelling components similar in structure to agarose.

3,753,973

THE PREPARATION OF 3'-4'-DIDEOXYKANAMYCIN B ACTIVE AGAINST RESISTANT BACTERIA

Sumio Umezawa, and Hamao Umezawa, Tokyo, and Tsutomu Tsuchiya, Yokohama, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

No Drawing. Filed June 2, 1971, Ser. No. 149,351
Claims priority, application Japan, July 29, 1970, 45/65,760
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 K 2 Claims

Synthesis of 3'-4'-dideoxykanamycin B which comprises protecting the amino and all or a part of the hydroxyl groups other than 3' and 4'-hydroxyl groups of kanamycin B, sulfonylating 3'- and 4'-hydroxyl groups to give a derivative having disulfonic ester groups, removing said ester groups to give 3'-4'-unsaturated compound, reducing said compound and finally removing the residual protecting groups.

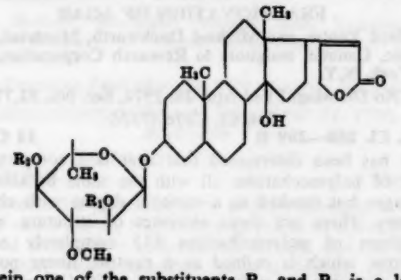
3,753,974

NERIIFOLIN DERIVATIVES

Fritz Kaiser, Lampertheim, Hessen, Wolfgang Schaumann, Heidelberg, Kurt Stach, Mannheim-Waldhof, and Wolfgang Voigtlander, Viernheim, Hessen, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,210
Claims priority, application Germany, Dec. 19, 1969, P 19 63 597.3
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 4 Claims

Neriifolin ethers, optionally acylated, of the formula



wherein one of the substituents R_1 and R_2 is a lower alkyl or alkoxyalkyl radical and the other is a hydrogen atom or a lower acyl radical.

These neriifolin derivatives are highly effective therapeutic agents and are suitable for oral administration in the treatment of cardiac insufficiency.

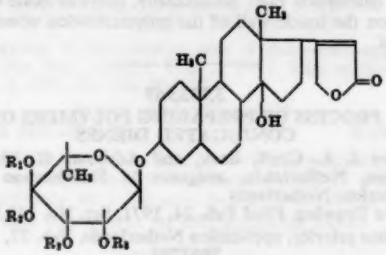
3,753,975

EVOMONOSIDE DERIVATIVE

Fritz Kaiser, Lampertheim, Hessen, Wolfgang Schaumann, Heidelberg, Kurt Stach, Mannheim-Waldhof, and Wolfgang Voigtlander, Viernheim, Hessen, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,212
Claims priority, application Germany, Dec. 15, 1969, P 19 62 757.7
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 8 Claims

Evomonoside ethers and/or esters of the formula



wherein one or two of the substituents R_1, R_2 and R_3 is lower alkyl or alkoxyalkyl or wherein the substituents R_2 and R_3 together represent a lower alkylidene radical, and the remaining substituents are hydrogen or acyl.

These evomonoside derivatives are highly effective therapeutic agents and are suitable for oral administration in the treatment of cardiac insufficiency.

3,753,976

PROCESS FOR PREPARING POLYHALOHEMIACETAL DERIVATIVES OF POLYSACCHARIDES

George M. Grass, Jr., Phoenixville, and Raymond R. Unangst, Havertown, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed July 17, 1972, Ser. No. 272,261
Int. Cl. C08f *19/06*
U.S. Cl. 260—233.3 A 5 Claims

Polyhalohemiacetal derivatives of polysaccharides are prepared by dissolving the reactant, a polyhaloacetaldehyde, its hydrate or alkanoate with a polysaccharide in the desired weight ratio in a minimum amount of water; after a brief reaction period the reaction mixture is diluted with water to give an easily handled viscosity then spray dried. The process is most useful to prepare amicloral using chloral or chloral hydrate and a commercial grade of starch such as U.S.P. or pearl grade.

3,753,977

PROCESS FOR THE CLEAVAGE OF ESTERS OF 7-AMINO-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Bruno Fechtig, Reinach, Basel-Land, Ernst Vischer, Basel, Hans Bickel, Binningen, Rolf Bosshardt, Arlesheim, and Jakob Urech, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Summit, N.J.

No Drawing. Continuation-in-part of application Ser. No. 842,359, filed July 16, 1969. This application July 14, 1970, Ser. No. 54,848
Claims priority, application Switzerland, Nov. 27, 1969, 17,668/69; Jan. 15, 1970, 517/70
Int. Cl. C07d *99/16, 99/24*
U.S. Cl. 260—239.1 6 Claims

The invention concerns the cleavage of 2-iodoethyl esters of 6-amino-penam-3-carboxylic acid and 7-amino-cephem-4-carboxylic acid compounds by means of chemical reducing agents. The 2-iodoethyl esters and the corresponding 2-chloro- and 2-bromoethyl esters of 6-amino-penam-3-carboxylic acid and 7-amino-cephem-4-carboxylic acid compounds are useful for the temporary protection of the carboxyl group in such compounds.

3,753,978

PYRAZOLINE DERIVATIVES

Klaus Adelsberger, Ludwigshafen, Erwin Hahn, Viernheim, and Horst Scheuermann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 2, 1970, Ser. No. 419
Claims priority, application Germany, Jan. 4, 1969, P 19 00 349.7
Int. Cl. C07d *49/10*
U.S. Cl. 260—239.9 4 Claims

Diphenylpyrazoline derivatives having a 5-carboxylic ester or amide group which are useful as optical brighteners for textile material of natural or synthetic fibers.

3,753,979

SUBSTITUTED 1,2α-METHYLENE-6,7α-HALOMETHYLENE-20-SPIROX-4-EN-3-ONES OR 3-OLS AND ACYL ESTERS THEREOF

Glen E. Arth, Cranford, and Gary H. Rasmusson, Watchung, N.J., assignors to Merck Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 21,183, Mar. 19, 1970, which is a continuation-in-part of application Ser. No. 824,672, May 14, 1969, both now abandoned. This application Dec. 6, 1971, Ser. No. 205,304
Int. Cl. C07c *173/06*
U.S. Cl. 260—239.55 R 5 Claims

1,2α-methylene-2-spirox-4-en-3-ones (or 3,21-diones) and the corresponding 3-ols and their acyl ester derivatives are provided having 6,7α-halomethylene substituent; the compounds exhibit antiandrogenic activity.

3,753,980

PROCESS FOR THE PREPARATION OF 14-ANHYDROBUFALINE

Werner Haede, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Kurt Radscheit, Kelkheim, Taunus, and Ulrich Stache, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 29, 1971, Ser. No. 194,003
Claims priority, application Germany, Oct. 30, 1970, P 20 53 310.2
U.S. Cl. 260—239.57 1 Claim

A process for the preparation of 14-anhydrobufaline by hydrogenating catalytically 3-keto-21-hydroxy-$\Delta^{4,14,20}$-cholatrienic acid-21-lactone treating 3-keto-21-hydroxy-5β-chola-14,20-dienic acid-21-lactone obtained with elementary sulfur in an inert high-boiling solvent and reducing the anhydrobufalone by means of trimethyl phosphite in isopropanol in the presence of iridium-IV-hydrochloric acid.

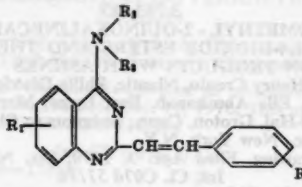
3,753,981

4-AMINO-2-STYRYLQUINAZOLINE COMPOUNDS

Hermann Breuer, Burgweinting, and Ernst Schulze, Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed July 15, 1970, Ser. No. 55,252
Int. Cl. C09b *23/14*
U.S. Cl. 260—240 D 10 Claims

New 4-amino-2-styrylquinazoline derivatives which have the general formula



and acid addition salts thereof, are useful as anti-inflammatory agents.

3,753,982

ANTI-BACTERIAL FURYL AND THIENYL THIAZOLE DERIVATIVES

Patrick Roffey, Camberley, and John Pomfret Verge, Henley-on-Thames, England, assignors to Lilly Industries, Limited, London, England

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,018
Claims priority, application Brazil, Dec. 19, 1969, 215,440, application Great Britain, Apr. 20, 1970, 18,801
Int. Cl. C07d *91/32*
U.S. Cl. 260—240 A 10 Claims

2-(5-nitro-2-furyl and 2-thienyl)- and 2-[2-(5-nitro-2-furyl and 2-thienyl)vinyl]-4-thiazolyl alcohols and 4-alkanoylthiazole acyl hydrazones possess antibacterial activity and may be prepared by hydrolysis of a corresponding thiazolyl alkyl ester to give the alcohols followed by oxidation and reaction with an acyl hydrazide to yield the hydrazones.

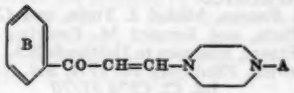
3,753,983

PIPERAZINE DERIVATIVES AND PROCESSES FOR THEIR MANUFACTURE

Thomas Raabe, Heusenstamm, Klaus Resag and Rolf-Eberhard Nitz, Frankfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt, Germany

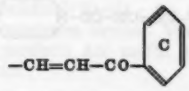
No Drawing. Filed Apr. 27, 1971, Ser. No. 137,966
Claims priority, application Germany, May 2, 1970, P 20 21 470.4
Int. Cl. C07d *51/70*
U.S. Cl. 260—240 J 3 Claims

The present invention relates to new, pharmacologically valuable piperazine derivatives of the general formula



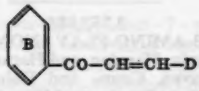
wherein

A means an alkyl or hydroxyalkyl radical having from 1 to 4 carbon atoms in the alkyl moieties, a benzhydryl or phenyl radical or one of the groups —COOR or

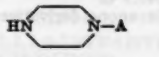


whereby R represents an alkyl group having from 1 to 4 carbon atoms and the benzene rings B and/or C may be substituted by halogen, an alkyl and/or alkoxy group having each from 1 to 4 carbon atoms, and/or by a nitro group

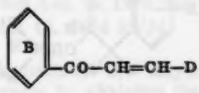
and to the production of such derivatives by reacting a compound of the general formula



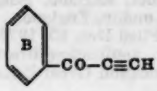
wherein D means ONa, OK, O-alkyl, OH, Cl or Br and wherein the benzene ring may be substituted as indicated above with a piperazine compound of the general formula



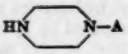
wherein A has the meaning given above, or by reacting, at a molar ratio of 2:1, a compound of the general formula



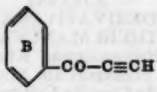
wherein D means ONa, OK, O-alkyl, OH, Cl or Br and wherein the benzene ring may be substituted as indicated above with piperazine, or by reacting a compound of the general formula



wherein the benzene ring may be substituted as indicated above with a compound of the general formula



wherein A has the meaning given above, or by reacting, at a molar ratio of 2:1, a compound of the general forumla



wherein the benzene ring may be substituted as indicated above with piperazine.

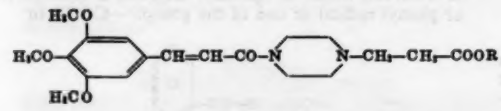
3,753,984

AMIDES DERIVED FROM THE ESTERS OF 1-PIPERAZINE PROPIONIC ACID, THEIR METHOD OF PREPARATION AND THEIR APPLICATION TO THERAPEUTICS

Claude P. Fauran, Michel J. Turin, and Guy M. Raynaud, Paris, and Bernard M. Pourrias, Meudon La Foret, France, assignors to Delalande S.A.

No Drawing. Filed May 26, 1971, Ser. No. 147,274
Int. Cl. C07d *51/70*
U.S. Cl. 260—240 J **2 Claims**

Compounds of the formula



in which R is alkyl having 1 to 4 carbon atoms.

The compounds are made by reacting 3,4,5-trimethoxy cinnamoyl halide with an ester of 1-piperazine propionic acid in the presence of an alkaline agent.

The compounds possess properties of coronary dilation with a diminution of the cardiac consumption of oxygen as well as hypotensive, vasodilator and β-inhibitor properties.

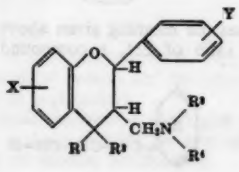
3,753,985

3-AMINO-FLAVANONES

John Joseph Gavin, Hamden, and Herman Henry Walchli, Jr., West Haven, Conn., and Dale Adrian Stauffer, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,181
Int. Cl. C07d *7/20*
U.S. Cl. 260—247.7 G **3 Claims**

A group of flavanone derivatives of the structural formula



in which R^1 is hydrogen, R^2 is OH or O (lower)acyl, or R^1R^2 taken together are O, R^3 is H or (lower)alkyl, R^4 is H or (lower)alkyl or NR^3R^4 is a heterocyclic moiety of six members, X is a halogen, (lower)alkyl or (lower) alkoxy, and Y is a halogen, (lower)alkyl, or (lower)alkoxy; a process for preparing such compounds; and a process for inhibiting the growth of microorganisms.

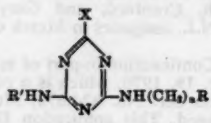
3,753,986

TRIAZINE HERBICIDES

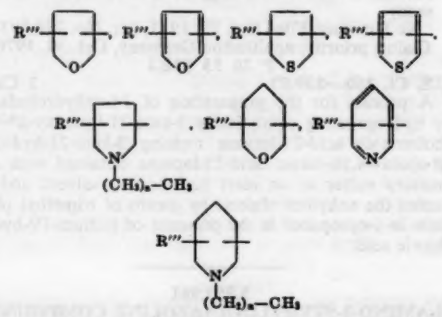
Gopal H. Singhal, Westfield, and Helde Roebke, Avenel, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Apr. 2, 1970, Ser. No. 25,237
Int. Cl. C07d *55/20, 55/22*
U.S. Cl. 260—249.6 **21 Claims**

Triazine compounds represented by the structural formula:



wherein X is one selected from the group consisting of Cl, Br, N_3, C_1–C_6 thioalkyl, C_2–C_6 alkylthioalkylthio, C_2–C_6 alkylsulfonylalkylthio, C_2–C_6 alkylsulfoxyalkylthio, C_2–C_6 alkoxyalkylthio, C_1–C_6 chloroalkylthio, C_1–C_6 bromoalkylthio, C_1–C_6 alkoxy, C_2–C_6 alkylthioalkyloxo, C_2–C_6 alkylsulfonylalkyloxo, C_2–C_6 alkoxyalkyloxo, C_1–C_6 chloroalkyloxo, C_1–C_6 bromoalkyloxo; R′ is hydrogen, C_1–C_3 alkyl, C_3–C_6 cycloalkyl or C_4–C_8 alkylcycloalkyl with the proviso that the ring may contain at least one hetero atom such as nitrogen, oxygen or sulfur; *n* is an integer ranging from 1 to 6; R is a 5 or 6 member ring containing 1 or more hetero atoms, said ring being one selected from the group consisting of the following:



wherein R‴ is one selected from the group consisting of H, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_1–C_6 haloalkyl, Cl, Br, and NO_2; wherein *n* is an integer from 0 to 3. Such compounds have shown outstanding pre- and post-emergence herbicidal activity.

3,753,987

3-HALOMETHYL-2-QUINOXALINECARBOXYLIC ACID-1,4-DIOXIDE ESTERS AND THEIR CYCLIZATION PRODUCTS WITH AMINES

Timothy Henry Cronin, Niantic, Philip Dietrich Hammen, Mystic, Elie Abushanab, East Lyme, Marwan Jawdat Abu El-Haj, Groton, Conn., assignors to Chas. Pfizer & Co., Inc., New York, N.Y.

No Drawing. Filed Apr. 3, 1970, Ser. No. 25,543
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 R **7 Claims**

3-halomethyl-2-quinoxalinecarboxylic acid, alkyl ester, 1,4-dioxides useful as antibacterial agents are converted,

on treatment with ammonia and amines to 2,3-dihydro-1-oxo-1H-pyrrolo[3,4-b]quinoxaline-4,9-dioxides also useful as chemotherapeutic agents and in promoting growth and improving feed efficiency of animals, in general.

3,753,988

SUBSTITUTED PHTHALAZINES

Ronald Ernest Rodway, Bourne End, Buckinghamshire, and Robin George Simmonds, Wokingham, Berkshire, England, assignors to Aspro-Nicholas Limited, London, England

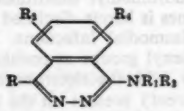
No Drawing. Filed Apr. 30, 1970, Ser. No. 33,506

Claims priority, application Great Britain, May 3, 1969, 22,679/69

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A 12 Claims

Pharmacologically active phthalazines are provided having the formula:



as well as pharmaceutical compositions containing these, and a method of anti-inflammatory treatment, comprising the administration of such compounds to an animal.

3,753,989

TETRACHLOROPYRAZINE BIS-N-OXIDE AND ITS PREPARATION

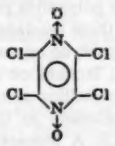
Demetrios Kyriacou, Oakley, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 7, 1971, Ser. No. 104,800

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 R 7 Claims

Tetrachloropyrazine bis-N-oxide corresponding to the formula



is prepared by the oxidation of tetrachloropyrazine or tetrachloropyrazine mono-N-oxide with hydrogen peroxide and sulfuric acid. This compound has activity as a selective herbicide.

3,753,990

PHENYLBISMUTH BIS(2-PYRIDINETHIOL 1-OXIDE)

John Downing Curry, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 98,086, Dec. 14, 1970. This application Jan. 17, 1972, Ser. No. 218,584

Int. Cl. C07d *31/50*

U.S. Cl. 260—270 R 1 Claim

Phenylbismuth bis(2-pyridinethiol 1-oxide), a new antibacterial and antifungal compound, and compositions containing same.

3,753,991

PRODUCTION OF 2,3-DIHYDROXYQUINOLINE

Hans-Juergen Sturm, Gruenstadt, and Helmut Goerth, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Original application May 19, 1969, Ser. No. 825,956, now Patent No. 3,682,928. Divided and this application Jan. 14, 1972, Ser. No. 217,947

Claims priority, application Germany, May 22, 1968, P 17 70 480.2

Int. Cl. C07d *33/38*

U.S. Cl. 260—283 SY 3 Claims

Production of 2,4-dihydroxyquinoline starting from N-acetoacetylanthranilic acid esters.

3,753,992

PROCESS AND INTERMEDIATES FOR QUININE, QUINIDINE AND DERIVATIVES THEREOF

Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 104,785, Jan. 7, 1971, which is a continuation-in-part of application Ser. No. 837,304, June 27, 1969, which is a continuation-in-part of application Ser. No. 741,913, July 2, 1968, all now abandoned. This application Dec. 27, 1971, Ser. No. 212,648

Int. Cl. C07d *43/24*

U.S. Cl. 260—284 55 Claims

Quinine, quinidine, their antipodes or racemates and derivatives thereof, are prepared by (a) cyclizing the correspondingly substituted 4 - [3-(1-chloro-3(R)-alkyl(or alkenyl) - 4(R)-piperidyl)-1-oxopropyl]quinolines, antipodes or racemates thereof, to the corresponding 4-[5(R)-alkyl(or alkenyl)-4(S)-quinuclidin-2(S) or 2 (R)-ylcarbonyl]quinolines, antipodes or racemates thereof; and (b) stereoselectively reducing the products of step (a) to α(S)-[5(R)-alkyl(or alkenyl)-4(S)-quinuclidin-2(R)-yl]-4-quinolinemethanols, antipodes or racemates thereof using di alkylaluminum hydride, and α(R)-[5(R)-alkyl(or alkenyl)-4(S)-quinuclidin-2(S)-yl] - 4 - quinolinemethanols, antipodes or racemates thereof. Various intermediates and the end products are useful antimalarial and antiarrhythmic agents.

3,753,993

1,4-DIHYDRO-4-OXO-7-PYRIDYL-3-QUINOLINECARBOXYLIC ACID DERIVATIVES

George Y. Lesher, and Philip M. Carabateas, Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed May 17, 1971, Ser. No. 144,307

Int. Cl. C07d *33/48*

U.S. Cl. 260—286 R 25 Claims

1,4-dihydro-1-(lower-alkyl)-4-oxo - 7 - pyridyl-3-quinolinecarboxylic acids and lower-alkyl esters having antibacterial activity, are prepared by reacting the corresponding 1,4-dihydro-4-oxo-7-pyridyl-3-quinolinecarboxylic acid or lower-alkyl ester with an alkylating agent, e.g., lower-alkyl halide, sulfate or sulfonate, and by other methods.

3,753,994

1,1'-AZINOBIS(1,2,3,4-TETRAHYDROISOQUINOLINES)

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,700

Int. Cl. C07d *35/34*

U.S. Cl. 260—288 R 2 Claims

1-(2-substituted-hydrazino) - 3,4 - dihydroisoquinolines, prepared in one process by alkylating the corresponding

3,4-dihydroisocarbostyrils, hydrazinolyzing the resulting 1-alkoxy-3,4-dihydroisoquinolines and condensing the resulting 1-hydrazino-3,4-dihydroisoquinolines with aldehydes or ketones, and 1,1'-azinobis(1,2,3,4-tetrahydroisoquinolines), prepared by condensing corresponding 1-alkoxy-3,4-dihydroisoquinolines and 1-hydrazino-3,4-dihydroisoquinolines, are useful as antihypertensive agents.

3,753,995

PROCESS AND INTERMEDIATES IN THE PREPARATION OF EBURNAMONINE

Jacques Martel, Bondy, and Germain Costerousse, Montrouge, France, assignors to Roussel-UCLAF, Paris, France

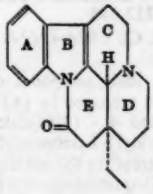
No Drawing. Filed Dec. 28, 1971, Ser. No. 213,215

Claims priority, application France, Jan. 6, 1971, 7100204

Int. Cl. C07d *57/08*

U.S. Cl. 260—293.53 6 Claims

The object of this invention is a new process of preparation of (±) eburnamonine of the formula:



It is known that eburnamonine has been isolated from several plant species such as Vinca minor and Hunteria Eburnea.

Eburnamonine possesses interesting pharmacological properties; it provokes a hypertension accompanied by a respiratory and cardiac stimulation and an increase of tonicity.

In addition, eburnamonine can serve as starting material in the synthesis of known analogous compounds displaying an interesting physiological activity.

3,753,996

DERIVATIVES OF 4-(AMINOETHANESULFONYLAMINO)-PHENETIDINE

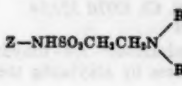
Shun-ichi Naito, 35 Murasakino Kamitorida-cho, Kita-ku, Kyoto, Japan

No Drawing. Application Feb. 10, 1969, Ser. No. 798,184, which is a continuation-in-part of application Ser. No. 778,792, Nov. 25, 1968, now abandoned. Divided and this application Dec. 2, 1970, Ser. No. 94,615

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 F 6 Claims

Analgesic-antipyretic compounds are provided which are derivatives of 4-(aminoethansulfonylamino)-antipyrine and aminoethanesulfonyl-p-phenetidine of the formula:



wherein Z is 4-antipyryl or p-ethoxyphenyl and R^1 and R^2 are each hydrogen, alkyl or acyl. Intermediates and administrable compositions are disclosed. The compounds form stable aqueous solutions retaining practically full activity.

3,753,997

TRIFLUOROMETHLY SUBSTITUTED-2,6-DIPHENYL-4-PYRIDYL CARBINOLAMINE ANTIMALARIALS

Arthur B. Ash, 1519 Chateaufont, Detroit, Mich. 48207; Peter Blumbergs, 22021 Sunset, Oak Park, Mich. 48237; Anica Markovac, 18271 Meadowood Ave., Sterling Heights, Mich. 48077; and Maurice P. La Montagne, 3539 Cero Drive, Lathrup Village, Mich. 48075

No Drawing. Filed June 7, 1971, Ser. No. 150,746

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R 6 Claims

A series of trifluoromethyl substituted-2,6-diphenyl-4-pyridylcarbinolamines is herein disclosed which has value in treatment of plasmodial infections. The compounds have substituted phenyl groups at positions 2- and 6- on the pyridine moiety, with the electronegative substituents (the same, or different) present on the phenyl nuclei at least one of which is trifluoromethyl. The syntheses of such series is described, together with a method for separation of racemates of a representative 4-pyridylcarbinolamine type.

3,753,998

COMPOSITION AND PROCESS FOR PRODUCING POLYAMIDE-IMIDE AND POLYAMIDE POLYMERS

Edwin F. Morello, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 147,238, May 26, 1971. This application Apr. 24, 1972, Ser. No. 246,576

Int. Cl. C08g *20/08, 20/32, 51/44*

U.S. Cl. 260—30.2 R 33 Claims

A polyamide-imide or polyamide prepared by heating in a solvent the following three reactants: (1) trimellitic anhydride, or isophthalic acid, or mixtures thereof, (2) aromatic diamines and (3) lactams or amino acids wherein the molar ratio of the trimellitic anhydride or isophthalic acid to the aromatic diamine to the lactams is about 1:1:0.3 to about 1:1:2.5. A process for preparing these polyamide-imides is also disclosed. These polyamide-imides are useful as insulating coatings for electrical wire and in molded articles.

3,753,999

2-THIOCYANOMETHYLSULFONYL BENZOTHIAZOLE

Albert Tempel and Hendrik Dolman, Van Houtenlaan, Weesp, Netherlands, assignors to North American Philips Co., Inc., New York, N.Y.

No Drawing. Filed Oct. 7, 1968, Ser. No. 765,672

Claims priority, application Netherlands, Oct. 10, 1967, 6713712

Int. Cl. C07d *91/44*

U.S. Cl. 260—306.6 R 1 Claim

Fungicidal compositions containing sulphoxyl or sulphonyl methylene rhodanide and substitution products thereof.

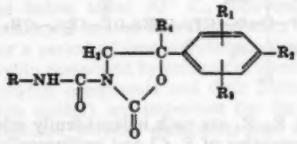
3,754,000

DERIVATIVES OF 3-AMINOCARBONYL-2-OXAZOLIDINONE AND THEIR PROCESS OF PREPARATION

Claude P. Fauran and Colette A. Douzon, Paris, Gerard J. Huguet, Malesherbes, Guy M. Raynaud, Paris, and Claude J. Gouret, Meudon, France, assignors to Delalande S.A., Courbevoie, France

No Drawing. Filed Mar. 22, 1971, Ser. No. 127,049
Claims priority, application France, Mar. 24, 1970, 7010453; Feb. 17, 1971, 7105295
Int. Cl. C07d 85/28
U.S. Cl. 260—307 C 3 Claims

A compound of the formula



in which

R_4 is H or phenyl

R is phenyl, alkyl or alkenyl having 1–4 C or a cycloaliphatic having 5 or 6 C

R_1, R_2 and R_3 is hydrogen methyl or halogen,

The compound is formed by reacting an isocyanate

with an oxazolidinone.

The compounds possess anticonvulsive myorelaxant, antidepressive, antiinflammatory, anxiolylic and analgesic properties.

3,754,001

9-IMIDAZOLYL-FLUORENE-9-CARBOXYLIC ACID COMPOUNDS

Helmut Timmler and Karl-Heinz Buchel, Wuppertal-Vohwinkel, and Robert R. Schmidt, Leverkusen-Rheindorf, and Ludwig Eue, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 20, 1970, Ser. No. 91,542
Claims priority, application Germany, Dec. 24, 1969, P 19 64 996.8
Int. Cl. C07d 49/36, 47/18, 55/106
U.S. Cl. 260—309 11 Claims

9-Azolyl-fluorene-9-carboxylic acid compounds e.g., 9-imidazolyl or 9-triazolyl fluorene-9-carboxylic acid compounds which may be additionally substituted, e.g., halogenated, and agriculturally acceptable salts thereof, exhibit outstanding plant growth regulant activity including growth inhibiting, growth promoting and growth altering activity.

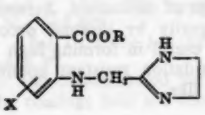
3,754,002

SUBSTITUTED IMIDAZOLINYLMETHYL ANTHRANILATES

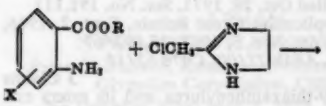
Richard E. Brown, Hanover, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,569
Int. Cl. C07d 49/34
U.S. Cl. 260—309.6 6 Claims

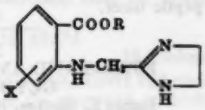
Compounds of the formula are disclosed:



wherein R is hydrogen or alkyl and X is hydrogen, lower alkyl, nitro, halogen or trifluoromethyl. These compounds are prepared as follows:



I II



III

Compounds in which R is hydrogen are prepared by hydrolysis of the ester with dilute aqueous alkali followed by neutralization with mineral acid. They are useful as pressor agents.

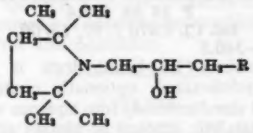
3,754,003

TETRAMETHYL PYRROLIDINE DERIVATIVES

Andrea Pedrazzoli and Leone Dall Asta, both of Via Piranesi 38, Milan, Italy

No Drawing. Continuation-in-part of abandoned application Ser. No. 777,470, Nov. 20, 1968. This application July 8, 1971, Ser. No. 112,599
Int. Cl. C07d 27/04
U.S. Cl. 260—326.5 R 9 Claims

New tetramethylpyrrolidino-derivatives of the general formula



wherein R is a phenoxy or phenyl-alkyloxy radical, optionally substituted in the benzene ring; and their therapeutically acceptable acid addition salts, are useful as local anaesthetic agents having a very low acute toxicity.

3,754,004

PROCESS FOR PREPARING 3-INDOLYL ALIPHATIC ACID DERIVATIVES

Hisao Yamamoto, Nishinomiya, and Masaru Nakao, Osaka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Original application Mar. 10, 1970, Ser. No. 622,076, now Patent No. 3,544,563. Divided and this application June 16, 1970, Ser. No. 46,827
Claims priority, application Japan, Mar. 15, 1966, 41/16,236; Mar. 18, 1966, 41/17,085; Jan. 24, 1967, 42/4,951
The portion of the term of the patent subsequent to Feb. 16, 1988, has been disclaimed
Int. Cl. C07d 27/56
U.S. Cl. 260—326.13A 3 Claims

N-acylated 3-indolyl acetic acid derivatives having anti-inflammatory, analgesic, antipyretic and anticholesterolemic activities and being useful as an intermediate for anti-inflammatory drugs which are prepared by reacting an N^1-acylated phenylhydrazine derivative with a ketoglutaric acid or its derivative at an elevated temperature.

3,754,005
THIAXANTHENE DERIVATIVES

Stuart Sanders Adams, Bernard John Armitage, Norman William Bristow, and Bernard Vincent Heathcote, Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

No Drawing. Filed Oct. 20, 1971, Ser. No. 191,111
Claims priority, application Great Britain, Sept. 2, 1966, 39,384/66; Apr. 5, 1967, 15,692/67
Int. Cl. A61k *27/00*; C07d *65/16*
U.S. Cl. 260—328 3 Claims

N - hydroxy-N-9-thiaxanthenylurea and its esters and substituted derivatives thereof useful in the treatment of peptic ulcer.

3,754,006
ESTERS AND AMIDES OF SUBSTITUTED GLYOXYLIC ACIDS

James E. Siggins, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Application Dec. 3, 1969, Ser. No. 881,892, which is a continuation-in-part of application Ser. No. 613,457, Feb. 2, 1967, now Patent No. 3,532,737. Divided and this application Oct. 7, 1971, Ser. No. 187,532
Int. Cl. A61k *27/00*; C07d *63/10*
U.S. Cl. 260—332.2 A 13 Claims

The compounds are esters and amides of alkylglyoxylic and arylglyoxylic acids, prepared from the free acids and the appropriate substituted alcohol, amine or alkyl halide. The compounds are useful as plasticizers, and the members of a sub-group are useful as hypoglycemic agents.

3,754,007
PROCESS FOR THE PRODUCTION OF CYCLOHEXANEDIONE-(1,2)-HEMIHYDRATE

Wilhelm Sutter, Leverkusen, Karl-Friedrich Wedemeyer, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 6, 1970, Ser. No. 9,437
Claims priority, application Germany, Feb. 21, 1969, P 19 08 679.4
Int. Cl. C07d *1/02, 13/00*
U.S. Cl. 260—340.5 8 Claims

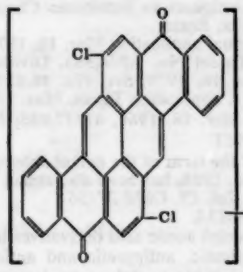
Cyclohexanedione-(1,2)-hemihydrate is obtained by introducing cyclohexanol, optionally containing water, and nitric acid simultaneously into aqueous sulphuric acid containing a catalytic amount of nitrous acid with thorough mixing at a temperature of 0° to 18° C.

3,754,008
DYES OF THE PYRANTHRONE SERIES

Fritz Graser, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,402
Claims priority, application Germany, Apr. 11, 1970, P 20 17 450.9
Int. Cl. C09b *3/42*
U.S. Cl. 260—360 2 Claims

New dyes having the formula:



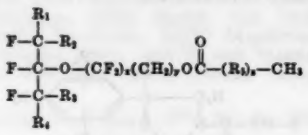
where *n* denotes a value from 0.1 to 2.5. The dyes have excellent fastness properties including light fastness and fastness to weather.

3,754,009
NOVEL ESTERS OF POLYFLUOROISOALKOXY ALKANOLS

Louis G. Anello, Orchard Park, Richard F. Sweeney, Elma, N.Y., and Morton H. Litt, Cuyahoga, Ohio, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 633,359, Apr. 25, 1967. This application May 25, 1970, Ser. No. 40,341
Int. Cl. C11c *3/00*; C07c *69/02*
U.S. Cl. 260—408 20 Claims

Compounds of the formula:



wherein (a) R_1–R_4 are each independently selected from the group consisting of F, Cl and perfluoroalkyl, and together can form a perfluorocycloalkylene group, with the proviso that R_1–R_4 may not contain more than two chlorine atoms, (b) x is an integer from 1–81, (c) y is an integer from 1–81, (d) R_3 is a divalent alkylene group having from 1–22 carbon atoms, and (e) z is 0 or 1, are useful as insulator and condenser fluids, hydraulic fluids, lubricants and heat transfer media. These compounds are also surface active and are useful as anti-wetting agents.

3,754,010
CO-OXIDATION PROCESS FOR THE PRODUCTION OF SYNTHETIC FATTY ACIDS

Karl P. Kammann, Jr., Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed May 3, 1971, Ser. No. 139,898
Int. Cl. C08h, *17/36*
U.S. Cl. 260—413 7 Claims

A co-oxidation process is provided whereby aliphatic monocarboxylic acids are obtained by the autoxidation of paraffin/olefin mixtures in the presence of a catalyst at atmospheric pressure. The process provides efficient oxidation of both the paraffin and the olefin at low temperatures while maintaining acceptable reaction rates and gives an improved distribution to a narrow range of preferred synthetic fatty acids.

3,754,011
METHOD FOR THE PREPARATION OF ZIRCONIUM, HAFNIUM AND THORIUM ALKOXIDES

Michael Hoch, 2920 Scioto St., Cincinnati, Ohio 45219

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,937
Int. Cl. C07f *7/00*
U.S. Cl. 260—429.1 16 Claims

A method for preparing metal alkoxides of hafnium, zirconium and thorium in high yields and particularly adapted for large scale operations. The method involves a preparation of metal isopropoxides of the selected metal by the reaction of a metal tetrahalide with isopropyl alcohol under controlled alkaline conditions to form the desired metal tetraisopropoxide in high yields. The metal tetraisopropoxides are then reacted with secondary or tertiary alkanols heavier than isopropanol by alcoholysis exchange to produce the metal tetra secondary or tertiary alkoxides. The metal tetraalkoxides produced are useful as precursor materials in the preparation of fine powders, films and coatings of zirconium, hafnium and thorium oxides in high purity by thermal decomposition. The metal oxides are useful in forming high temperature ceramic bodies, oxidation resistant coatings, absorbants, catalysts and the like.

3,754,012
PREPARATION OF METHYLTIN COMPOUNDS
Eric Jan Bulten, Bilthoven, the Netherlands, assignor to Cosan Chemical Corporation, Clifton, N.J.
No Drawing. Filed Jan. 6, 1972, Ser. No. 215,916
Claims priority, application Netherlands, Jan. 7, 1971, 7100202
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 12 Claims

Methyltin compounds having a structure represented by the formula

$$(CH_3)_{4-n}SnX_n$$

in which X is a halogen and *n* is an integer from 0 to 3 are produced in high yield by a process in which a stannic halide is transmethylated with tetramethyllead at a temperature below about 90° C., following which the reaction product is heated to a temperature above about 100° C. for a period of time sufficient to produce the desired methyltin compound by exhaustive transmethylation. These methyltin compounds and their derivatives (such as methyltin oxides) are important for the preparation of many biocides, polymer stabilizers, glass strengthening agents and catalysts.

3,754,013
ARSENIC CONTAINING ENAMINES AND AMIDINIUM SALTS
Harold I. Weingarten, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Dec. 20, 1971, Ser. No. 210,236
Int. Cl. C07f 9/66
U.S. Cl. 260—440 3 Claims

The invention relates to arsenic containing enamines and amidinium salts prepared by reacting enamines with metal halides. The products are useful as a source of functionalized organic arsenic compounds suitable for incorporation into nylon spinning mixtures to impart resistance to fungi and bacteria.

3,754,014
VAPOR PHASE REACTION OF AROMATIC NITRO COMPOUNDS TO FORM AROMATIC ISOCYANATES
Ehrenfried H. Kober, Aschau, near Kraiburg, Upper Bavaria, Germany, and Richard H. Martin, Brevard, N.C., assignors to Olin Corporation
No Drawing. Original application June 26, 1968, Ser. No. 740,059. Divided and this application June 10, 1971, Ser. No. 151,909
Int. Cl. C07c 119/04
U.S. Cl. 260—453 PC 12 Claims

In a continuous process for preparing aromatic isocyanates from the corresponding aromatic nitro compounds in the presence of a catalyst in a reaction zone at an elevated temperature, the improvement which comprises vaporizing said aroamtic nitro compound, mixing said vapor with gaseous carbon monoxide, contacting said mixture with said catalyst in said reaction zone, and withdrawing the reaction product containing aromatic isocyanate from said reaction zone. Catalysts include halides and oxides of noble metals, preferably when supported on silicon carbide. Utilizing a halide of copper as a catalyst component also improves isocyanate yields.

3,754,015
NOVEL PARACYCLOPHANES AND PROCESS FOR PREPARATION
Eddie Hedaya, White Plains, N.Y., assignor to Union Carbide Corporation
No Drawing. Continuation of application Ser. No. 555,267, June 6, 1966. This application July 22, 1969, Ser. No. 849,557
Int. Cl. C07c 143/68
U.S. Cl. 260—456 P 1 Claim

Novel mono- and di-substituted paracyclophanes having utility in the coatings field are conveniently prepared by the reaction of an oxalylhalide with [2.2]-paracyclophane to give a haloformyl-substituted [2.2]-paracyclophane which thereafter can serve as a starting material for various paracyclophane derivatives.

3,754,016
NOVEL CYCLOALKENONE ESTERS
Peter Oberhänsli, Kusnacht, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.
No Drawing. Filed Mar. 4, 1970, Ser. No. 16,608
Claims priority, application Switzerland, Mar. 10, 1969, 3,607/69
Int. Cl. C07c 49/58, 69/74
U.S. Cl. 260—468 K 10 Claims

There are provided novel cycloalkenone esters and enol ethers having 5–6 carbon atoms in the ring, and methods of producing said compounds which are useful as synthetic intermediates in the preparation of valuable odorants of the jasmine group. The novel esters are prepared by reacting the corresponding enol ether with a malonic ester in an anhydrous alkaline reaction medium.

3,754,017
PRODUCTION OF CYANOACETALDEHYDE
Hans Juergen Strum, and Herbert Armbrust, Gruenstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Continuation-in-part of application Ser. No. 30,287, Apr. 20, 1970. This application Oct. 14, 1971, Ser. No. 189,389
Claims priority, application Germany, Apr. 22, 1969, P 19 20 246.1
Int. Cl. C07c 121/02
U.S. Cl. 260—465.1 6 Claims

Production of cyanoacetaldehyde by preparing an isoxazoline and splitting it in the presence of an inorganic base. The product is a valuable intermediate in the manufacture of dyes and pesticides.

3,754,018
NOVEL REACTIONS OF HCN, HF AND OLEFINS
Louise DeVries, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed May 8, 1970, Ser. No. 35,896
Int. Cl. C07c 121/04, 121/02, 121/42
U.S. Cl. 260—465.3 12 Claims

1-cyano-1,2-diimino compounds and derivatives thereof are prepared by the reaction of hydrofluoric acid and hydrocyanic acid with an olefin. The resulting product, which is a ketenimine or its tautomer, can be treated with a variety of nucleophilic reagents to form such compounds as triaminoacrylonitrile, derivatives of oxalimidic acid, etc. The compounds can be used as a controlled source of hydrocyanic acid or amines, as monomers for polymerization, with dienes in Diels-Alder reactions, as chelating agents and acylating agents.

3,754,019
5-ARYLPHENYLPHOSPHONIC AND PHOSPHONOUS ACIDS
Lewis H. Sarett, Skillman, and John Hannah, Matawan, N.J., assignors to Merck & Co. Inc., Rahway, N.J.
No Drawing. Continuation-in-part of application Ser. No. 836,665, June 25, 1969. This application Apr. 20, 1970, Ser. No. 30,324
Int. Cl. 07f 9/30, 9/40, 9/48
U.S. Cl. 260—479 R 10 Claims

5-arylphenylphosphonic and phosphonous acids and their derivatives are described and the processes for pre-

paring the same are disclosed. These compounds exhibit anti-inflammatory properties and also possess an effective degree of anti-pyretic and analgesic activity.

3,754,020

PRODUCTION OF GLYCEROL ACETATES

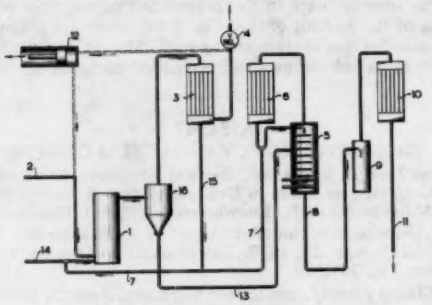
Wilhelm Vogt, Hurth-Efferen, Kurt Sennewald, Hurth-Hermulheim, and Hermann Glaser, Erftstadt Lechenich, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Nov. 12, 1971, Ser. No. 198,128

Claims priority, application Germany, Nov. 14, 1970, P 20 56 132.4

Int. Cl. C07c 67/00

U.S. Cl. 260—491 4 Claims



Production of glycerol triacetate and glycerol diacetate by the reaction of allyl acetate, acetic acid and molecular oxygen at elevated temperature, under a pressure of between 1 and 200 atmospheres absolute in liquid phase, in the absence of catalysts. More particularly, a solution of allyl acetate in acetic acid containing between 1.5 and 15 weight percent of acetaldehyde is reacted with a mixture of oxygen and inert gas, at a temperature of between 30 and 250° C.

3,754,021

4-KETO-4-(3'-CHLORO-4'-CYCLOHEXYL)PHENYL-BUTYRIC ACID AND RELATED COMPOUNDS

Tsung-Ying Shen, Westfield, and Conrad P. Dorn, Jr., Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 29, 1968, Ser. No. 732,892

Int. Cl. C07c 65/20

U.S. Cl. 260—515 A 5 Claims

The preparation of various cyclohexylphenyl keto and hydroxy butyric acids and derivatives, the processes for preparing them, and their method of treatment as anti-inflammatory agents, are disclosed.

3,754,022

PROCESS FOR OXIDATION WITH CHROMIC ACID

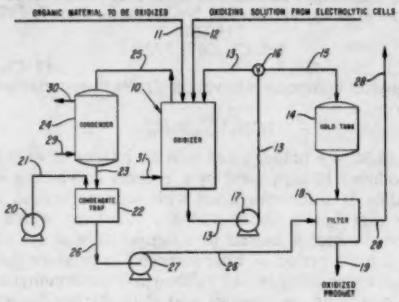
Edward A. Kling, and James L. Cousino, Muskegon, Mich., and James A. Frens, Houma, La., assignors to Lakeway Chemicals, Inc., Muskegon, Mich.

Filed June 12, 1970, Ser. No. 45,789

Int. Cl. C07c 63/02, 101/42

U.S. Cl. 260—518 R 7 Claims

Organic materials are oxidized with an aqueous oxidizing solution of chromic acid and sulfuric acid by admixing the organic material with the oxidizing solution in a relatively dilute form and then concentrating the oxidizing solution in situ by evaporation. The spent oxidizing solution is regenerated electrolytically.



3,754,023

β-4-n-PENTYLOXYBENZOYL-β-BROMOACRYLIC ACID

Miroslav Semonsky, Viktor Zikan, and Vaclav Jelinek, Prague, Czechoslovakia, assignors to Spofa United Pharmaceutical Works, Prague, Czechoslovakia

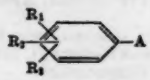
No Drawing. Original application Feb. 16, 1968, Ser. No. 705,927. Divided and this application Aug. 5, 1970, Ser. No. 61,485

Claims priority, application Czechoslovakia, June 17, 1967, 1,173/67

Intc. Cl. C07c 65/20

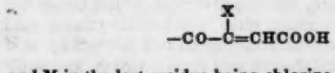
U.S. Cl. 260—521 A 1 Claim

A compound of the formula



(I)

wherein R_1 is hydrogen, or alkoxy having from 1 to 6 carbon atoms, R_2 is hydrogen, or hydroxy or alkoxy having from 1 to 6 carbon atoms, and R_3 is alkoxy having from 1 to 6 carbon atoms, with the proviso that when R_1 and R_2 are both hydrogen, R_3 is alkoxy having from 2 to 6 carbon atoms, and wherein A is



and X in the last residue being chlorine or bromine having cytostatic activity.

An example of the product is β-4-n-pentyloxybenzoyl-β-bromoacrylic acid.

3,754,024

OXIDATION PROCESS

Frank Leach Foster and Peter Hay, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 4, 1971, Ser. No. 112,760

Int. Cl. C07c 55/14, 55/04

U.S. Cl. 260—531 R 9 Claims

Manufacture of an alkane dicarboxylic acid, particularly adipic acid by feeding an alkanol, alkanone or mix-

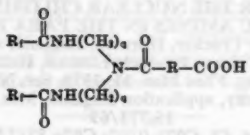
ture into nitric acid of 40–70% (preferably 50–65%) strength and fractionally distilling volatile matter from the oxidation zone to keep up the strength of the nitric acid and thereby improve the yield of dicarboxylic acid.

3,754,025
PRODUCTION OF ORGANIC ACIDS
Bertram Yeomans, Hessle, England, assignor to BP Chemicals Limited, London, England
No Drawing. Filed Dec. 15, 1970, Ser. No. 98,473
Claims priority, application Great Britain, Dec. 19, 1969, 61,918/69
Int. Cl. C07c *51/14, 51/00*
U.S. Cl. 260—533 R **17 Claims**

In the production of di-neo acids from an olefin having two diisoalkyl groups separated by not less than 3 carbon atoms and formic acid, or CO and a mineral or Lewis acid, the yield based on diisoalkyl olefin may be increased by feeding other olefins of defined structure.

3,754,026
FLUOROCARBON AMIDES
Wilhelmus M. Beyleveld, Whippany, Bryce C. Oxenrider, Florham Park, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Oct. 17, 1969, Ser. No. 867,371
Int. Cl. C07c *103/44*
U.S. Cl. 260—534 M **5 Claims**

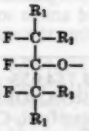
Novel fluorocarbon amides useful as oil- and water-repellent agents have the formula



wherein R is an alkylene group of 1 to 12 carbon atoms, an alkenylene group of 2 to 12 carbon atoms, or a phenylene group; q is an integer from 1 to 6; and R_f is a radical having the formula

$$Y(CF_2)_s(CH_2)_t—$$

wherein s is an integer from 1 to 16, t is an integer not greater than s from 0 to 8, with the sum of s plus t being from 1 to 20; and Y is selected from the group consisting of $F_3C—$ and radicals having the formula



wherein R_1 and R_2 are fluorine or perfluoroalkyl groups having from 1 to 9 carbon atoms, with not more than three of the R_1 and R_2 groups being perfluoroalkyl groups.

3,754,027
α-HYDRAZINO-ORNITHINE AND PRECURSORS THEREOF
John Johansson, Palo Alto, and Wilfred A. Skinner, Portola Valley., Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
No Drawing. Filed Mar. 10, 1972, Ser. No. 233,761
Int. Cl. C07c *101/24*
U.S. Cl. 260—534 R **4 Claims**

Disclosed as novel compounds are N^{δ}-benzyloxycarbonyl-ornithine, 2-bromo-N-benzyloxycarbonyl-5-aminopentanoic acid, N^{δ}-benzyloxycarbonyl - α - hydrazino-ornithine, and α-hydrazino-ornithine, together with its salts. The first three of these compounds have utility as intermediates in the preparation of the α-hydrazino-ornithine compounds. The latter compounds have utility as microbicides and as inhibitors of ornithine decarboxylase.

3,754,028
GLYCOLIC ACID PRODUCTION
Seymour J. Lapporte, Orinda, and William G. Toland, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Aug. 21, 1972, Ser. No. 282,617
Int. Cl. C07c *59/06*
U.S. Cl. 260—535 R **9 Claims**

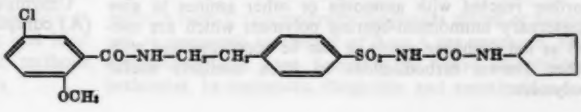
Glycolic acid, formic acid and acetic acid are produced by the reaction of formaldehyde, carbon monoxide and water in the presence of catalytic amounts of a Group VIII noble transition metal compound and an iodide promoter.

3,754,029
CONTINUOUS PROCESS FOR THE PURIFICATION OF MONOCHLOROACETIC ACID
Walter Freyer, Augsburg, and Manfred Gscheidmeier, Gersthofen, and Rolf Holtermann, Augsburg, and Rudolf Wirtz, Goggingen, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Continuation of abandoned application Ser. No. 757,751, Sept. 5, 1968. This application Sept. 13, 1971, Ser. No. 180,202
Claims priority, application Germany, Sept. 19, 1967, F 53,529
Int. Cl. C07c *51/42*
U.S. Cl. 260—539 A **7 Claims**

Di- and trichloroacetic acid contained as impurities in crude monochloroacetic acid are partially dehalogenated and transformed in monochloroacetic acid at a temperature of from 110 to 145° C. in a continuous process in the presence of hydrogen while trickling through a catalyst layer the active constituent of which is a noble metal of subgroup VIII of the Periodic Table.

3,754,030
N - [4-(β-<2-METHOXY-5-CHLORO-BENZAMIDO>-ETHYL) - BENZENESULFONYL]-N'-CYCLOPENTYL-UREA AND PROCESS FOR ITS MANUFACTURE
Helmut Weber, Frankfurt am Main, Walter Aumuller, and Karl Muth, Kelkheim, Taunus, and Rudi Weyer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Feb. 11, 1970, Ser. No. 10,659
Claims priority, application Germany, Feb. 25, 1969, P 19 09 272.9
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 DA **1 Claim**

N - [4 - (β-<2-methoxy-5-chloro-benzamido>-ethyl)-benzenesulfonyl]-N'-cyclopentyl-urea of the formula



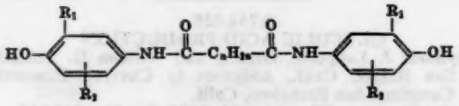
having a long-lasting and strong hypoglycemic action in the treatment of diabetes mellitus and a process for its manufacture.

3,754,031
N,N'-BIS(3,5-DI-t-BUTYL-4-HYDROXYPHENYL) ADIPAMIDE

Martin Dexter, Briarcliff Manor and Martin Knell, Ossining, N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 795,697, Jan. 31, 1969. This application Mar. 18, 1971, Ser. No. 125,828
Int. Cl. C07c *103/38*
U.S. Cl. 260—559 A **1 Claim**

Hydroxyphenyl acylamide compounds having the formula



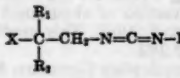
are prepared by reacting an alkyl aminophenol with an acyl chloride. These compounds are useful as stabilizers of organic materials which are subject to oxidative deterioration.

3,754,032
2-CHLOROALKYL CARBODIIMIDES AND A METHOD OF PREPARATION

Donald A. Tomalia and Thomas J. Giacobbe, Jr., Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 29, 1970, Ser. No. 76,649
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 R **9 Claims**

Novel carbodiimides of the formula

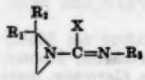


wherein X is chloro or bromo; R_1 and R_2 are hydrogen or lower alkyl; and R_3 is a hydrocarbyl or a halo- or nitro-substituted hydrocarbyl radical, are disclosed. The carbodiimides are prepared by reacting (a) an aziridine of the formula

with (b) an isocyanide dihalide of the formula

$$R_3—N=CX_2.$$

Novel 1-aziridinecarboximidoyl halides of the formula



are prepared as intermediates in the process when the process is conducted in the presence of an acid acceptor, e.g. triethylamine. Such intermediates rearrange upon warming, or in the presence of an acid, to form the corresponding carbodiimide.

The subject carbodiimides can be homopolymerized to give polymers bearing reactive chloroalkyl groups which are themselves useful as chelating agents or can be further reacted with ammonia or other amines to give quaternary ammonium-bearing polymers which are useful as ion exchange resins or can be copolymerized with other known carbodiimides to form similarly useful polymers.

3,754,033
BIOCIDAL UNSYMMETRICAL DI-HIGHER ALKYL DIMETHYL AMMONIUM COMPOUNDS

Edward Griffin Shay, Belle Mead., N.J., Reginald L. Wakeman, Philadelphia, Pa., and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Original application Dec. 9, 1968, Ser. No. 782,439. Divided and this application May 11, 1970, Ser. No. 36,485
Int. Cl. C07c *87/02*
U.S. Cl. 260—567.6 M **2 Claims**

Water-soluble unsymmetrical di-higher alkyl dimethyl ammonium salts having the structure:

wherein R and R' are either straight chain or predominantly straight chain but dissimilar alkyls, each ranging from 7 to 15 carbons, and at least one of which has an odd number of carbons, the sum of the carbon atoms in R and R' being in the range of from 20 to 22 carbons; and wherein X is a biocidally acceptable anion preferably derived from a halogen such as bromine or chlorine, or which may be methosulfate. These compounds have effective biocidal activity even in hard water, unlike other quaternary ammonium compounds which are inhibited in their biocidal activity by hard water. They are highly effective for the sanitization of all types of surfaces as well as eggs, fruits, vegetables and similar products.

3,754,034
PROCESS FOR THE NUCLEAR CHLORINATION OF AROMATIC AMINES IN THE PARA POSITION

Henry Peter Crocker, Hornsea, England, assignor to Reckitt & Colman Products Limited, Hull, England

No Drawing. Filed Mar. 31, 1970, Ser. No. 24,356
Claims priority, application England, Mar. 31, 1969, 16,771/69
Int. Cl. C07b *9/00*; C07c *87/52*
U.S. Cl. 260—578 **7 Claims**

A process for the nuclear chlorination of aromatic amines of the formula:

$$ArNR^1R^2$$

wherein Ar, R^1 and R^2 represent certain specified substituents comprises contacting at least one of the said amines with cupric chloride in an aqueous medium containing hydrochloric acid in excess of that required for neutralization of the said amine or amines, at a reaction temperature in the range of from 50 to 150° C. A continuous process for the said chlorination comprises contacting the said reactants under the above conditions, continuously passing an oxygen containing gas ito the reactor, separating the chlorinated amine so formed, and recycling any unchanged material into the reactor.

3,754,035
TERTIARY ORGANOPHOSPHINES

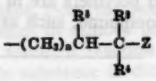
Martin Grayson, Stamford, Conn., assignor to American Cyanamid Company

No Drawing. Continuation-in-part of application Ser. No. 865,952, Oct. 13, 1969, which is a continuation of application Ser. No. 546,598, May 2, 1968, both now abandoned. This application Jan. 29, 1970, Ser. No. 6,952
Int. Cl. C07f *91/00, 91/02*
U.S. Cl. 260—584 R **4 Claims**

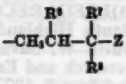
Unsymmetrical tertiary organophosphines selected from (A) compounds of the Formula I:

(I)

wherein Q is



and Q' is



and Q'' is Q, Q', alkyl, cycloalkyl, alkenyl, cycloalkenyl, cyanoalkyl, carboxyalkyl or carbamidoalkyl; and where Z is —OH or —NR^1R^2 where R^1 and R^2 independently are hydrogen or alkyl (C_1–C_4); R^2 may be acetyl, carbamyl or guanyl when R^1 is hydrogen; or R^1 together with R^2 and the nitrogen atom of —NR^1R^2 form a morpholinyl or piperidinyl ring; provided Z in Q and Q' are different; R^3 through R^8 independently are hydrogen or alkyl (C_1–C_4); and n is 0–3; and (B) acid salts of said compounds such as the hydrochlorides. The compounds and salts are depilatory agents.

3,754,036

ACYL-CYCLODODECENES, ACYL-CYCLODODECANES AND A PROCESS FOR PRODUCING THEM

Jack H. Blumenthal, Oakhurst, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 667,398, Sept. 13, 1967. This application Aug. 13, 1968, Ser. No. 752,145

Int. Cl. C07c *49/43, 49/45*

U.S. Cl. 260—586 A 16 Claims

Fragrance materials prepared by acylation of trimethyl cyclododecatriene, dihydro and tetrahydro derivatives thereof, processes for producing same, and purfume compositions containing such materials.

3,754,037

PROCESS FOR THE ACETYLATION OF CHAMIGRENES

Garry C. Kitchens, Wayne, Alan R. Hochstetler, Bloomfield, and Kent Kaiser, Pequannock, N.J., assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,472

Int. Cl. C07c *49/44*

U.S. Cl. 260—587 2 Claims

α- and β- chamigrenes when treated with acetic anhydride in the presence of polyphosphoric acid yield the novel 4 - aceto - 6,8a-ethano-1,1,6-trimethyl-1,2,3,5,6,7,8,8a-octahydronaphthalene. The novel acetyl compound thus produced is extremely useful as an odorant and fixative in perfume compounding.

3,754,038

2-PHENYL-2-ALKENALS

Michel Van Praag, Hilversum, Netherlands, and Herbert S. Stein, Rosedale, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Original application Apr. 26, 1968, Ser. No. 724,611. Divided and this application Nov. 23, 1970, Ser. No. 92,244

Int. Cl. C07c *47/48*

U.S. Cl. 260—599 6 Claims

Novel unsaturated aldehydes, particularly 2-phenyl-2-alkenals, useful for preparing flavoring compositions and food compositions, particularly those having chocolate or cocoa flavor and/or aroma qualities; flavoring and food compositions containing such aldehydes; and methods for preparing such aldehydes and compositions.

3,754,039

BICYCLIC ETHERS OF THE CYCLODODECANE SERIES

Peter Nageli, Unter-Ehrendingen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,978

Int. Cl. C07c *43/18*

U.S. Cl. 260—611 F 5 Claims

There are provided novel bicyclo [10.1.0] tridec-1-yl alkyl ethers which possess woody amber like odors and are useful in the perfume arts on the basis of their odors and fixative properties.

3,754,040

STERILIZED GLYCERYL GUAIACOLATE POWDER AND PROCESS FOR MANUFACTURING SAME

Raymond L. Moore, Plainfield, N.J., assignor to Summit Hill Laboratories, Summit, N.J.

No Drawing. Filed Jan. 9, 1970, Ser. No. 1,866

Int. Cl. A61l *1/00*; C07c *43/20*

U.S. Cl. 260—613 D 8 Claims

Glyceryl guaiacolate in powdered form is rendered sterile by treatment with ethylene oxide with the aid of heat but at a temperature below its melting point, and thereby made safe for administration to lower animals and to human beings.

3,754,041

LONG CHAIN UNSATURATED NITRO COMPOUNDS

Tetsuo Mitsuyasu, Fujisawa-shi, and Kiyotaka Ohno and Jiro Tsuji, Kamakura-shi, Japan, assignors to Toyo Rayon Company. Ltd., Tokyo, Japan

No Drawing. Filed Dec. 4, 1969, Ser. No. 882,284

Claims priority, application Japan, Dec. 5, 1968, 43/88,648; Mar. 10, 1969, 44/17,543

Int. Cl. C07c *79/06, 79/10*

U.S. Cl. 260—644 2 Claims

Long chain unsaturated nitro and amino compounds are disclosed. The long chain nitro compounds are produced by reacting an organic nitro compound having at least one hydrogen attached to the carbon atom alpha to the nitro group with a conjugated diene preferably in the presence of a palladium or platinum catalyst. The corresponding amino compound is thereafter formed by reducing of the nitro group. The nitro and amino compounds of this invention are valuable intermediates for the manufacture of organic compounds especially surface active materials and polymers.

3,754,042

HALONITROMETHYL CYCLOALKANES

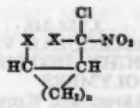
Wilson F. Gum, Jr., and David A. Nelson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 15, 1972, Ser. No. 289,322

Int. Cl. C07c *79/08*

U.S. Cl. 260—644 8 Claims

Compounds corresponding to the formula



wherein each X independently represents chloro or bromo and n represents an integer of 3 or 4 are prepared. The compounds have been found to be active insecticides, herbicides, bacteriocides, fungicides and nematocides.

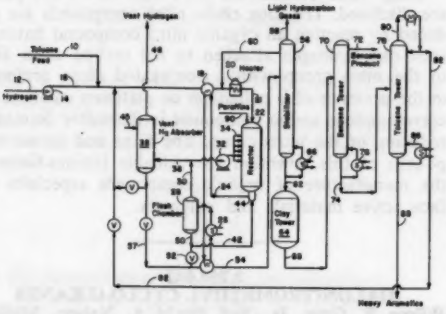
3,754,043
CONVERSION OF PERHALOALKANES
Geir Bjornson, and Homer M. Fox, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed July 29, 1970, Ser. No. 58,994
Int. Cl. C07c 17/20
U.S. Cl. 260—653 7 Claims

Perhaloalkanes having from 2 to 6 carbon atoms per molecule are converted to different halocarbons and monohydrogen-substituted halocarbons by contacting a selected perhaloalkane feedstock with hydrogen chloride at temperatures in the range of 1200 to 1800° F.

3,754,044
DEHYDROHALOGENATION OF HALOGENATED COMPOUNDS
Chester Arthur Hargreaves II, and Stanley James Piaseczynski, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Feb. 28, 1968, Ser. No. 712,899
Int. Cl. C07c 21/04, 21/20
U.S. Cl. 260—654 D 1 Claim

Halogen-containing organic compounds are treated with aqueous inorganic alkaline material in the presence of a catalytic amount of primary catalyst and promoter to split off hydrogen halide.

3,754,045
HYDRODEALKYLATION
Stanley W. Ehrlich, Far Rockaway, and Syd S. Chazanow, Floral Park, N.Y., assignors to Hydrocarbon Research, Inc., New York, N.Y.
Filed July 26, 1971, Ser. No. 165,964
Int. Cl. C07c 3/58
U.S. Cl. 260—672 NC 4 Claims



The reaction rates and temperatures for the thermal hydrodealkylation of a paraffin-free toluene feed with a paraffin-free hydrogen are controlled by the addition of light paraffin hydrocarbons boiling in the C_3 to C_6 range.

3,754,046
CONTROL OF MOLECULAR WEIGHT AND MOLECULAR WEIGHT DISTRIBUTIONS OF UNSATURATED POLYMERS
Nissim Calderon, Akron, and Kenneth W. Scott, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Dec. 4, 1969, Ser. No. 882,269
Int. Cl. C07c 11/12, 3/00
U.S. Cl. 260—677 R 16 Claims

A method of controlling the molecular weight and the molecular weight distribution of unsaturated polymers by subjecting the polymers to a catalytic olefin metathesis reaction while said polymers are in contact with an acyclic unsaturated compound, such as an olefin.

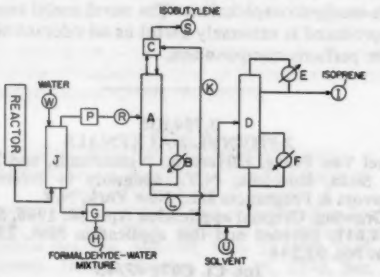
3,754,047
LOW VOLATILE COMPLEXING SOLUTIONS FOR OLEFIN RECOVERY
Robert B. Long, Atlantic Highlands, Hugh H. Horowitz, Elizabeth, and David W. Savage, Summit, N.J., assignors to Esso Research and Engineering Company
No Drawing. Filed June 2, 1972, Ser. No. 259,077
Int. Cl. C07c 7/00
U.S. Cl. 260—677 R 7 Claims

A process for separating complexible ligands is disclosed wherein a feedstream containing complexible ligands is contacted with a cuprous salt-sorbent material dissolved in a complexing solvent; the complexing solvent contains a major amount of a multi-ringed, high boiling, low melting aromatic and a minor amount of a strongly complexing, high boiling, single ringed aromatic. Separation of the ligands is effected by their complexation with the cuprous salt-sorbent material which removes said ligands from the feedstream to be subsequently recovered by decomplexing or ligand exchange techniques.

3,754,048
DIENE POLYMERIZATION
Ching Yong Wu, Pittsburgh, and Harold E. Swift, Gibsonia, Pa., assignors to The B. F. Goodrich Company
No Drawing. Filed Dec. 27, 1971, Ser. No. 212,733
Int. Cl. C07c 3/10
U.S. Cl. 260—680 B 7 Claims

Conjugated dienes are reacted to polymers (oligomers) of low molecular weight by contacting with a catalyst system consisting of chromium(III) acetylacetonate, trialkyl aluminum and a Schiff-base ligand.

3,754,049
METHOD FOR PURIFICATION OF ISOPRENE
Katsuhiko Ogino, and Masahiro Inoue, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Feb. 4, 1971, Ser. No. 112,736
Claims priority, application Japan, Feb. 4, 1970, 45/9,817
Int. Cl. C07c 7/08
U.S. Cl. 260—681.5 R 9 Claims



Isoprene reaction mixture obtained by reacting isobutylene and formaldehyde in presence of acid catalyst is purified to recover isoprene by contacting reaction mixture with water to remove unreacted formaldehyde, contacting resultant reaction mixture with an oily sub-

stance, obtained by eliminating water, isobutylene, formaldehyde and isoprene from the reaction mixture, in a first distillation column to remove unreacted isobutylene and subjecting the resultant reaction mixture containing isoprene and an oily substance to distillation in a second column, whereby isoprene is recovered as distillate. The oily substance thus separated from the isoprene can be recycled to the first distillation column.

3,754,050
PROCESS OF PURIFYING CONJUGATED DIOLEFINES

Coenraad J. Duyverman, Sittard, and Jacques M. M. Miessen, Eysden, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

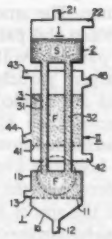
No Drawing. Filed Feb. 24, 1971, Ser. No. 118,563
Claims priority, application Netherlands, Feb. 25, 1970, 7002631
Int. Cl. C07c 7/12
U.S. Cl. 260—681.5 R **5 Claims**

Allenes, acetylenes and vinyl cyclohexenes are removed from conjugated diolefins by adsorption with a mixture of copper oxide and zinc oxide at a temperature between 25° C. and 175° C.

3,754,051
PRODUCTION OF OLEFIN FROM SATURATED HYDROCARBON

Yuichi Suzukawa, Hisashi Kono, Shigeyuki Nakai, Kohei Ninomiya, Atsushi Kuribayashi, and Masahiko Kitajima, Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

Filed July 27, 1971, Ser. No. 166,538
Claims priority, application Japan, Aug. 11, 1970, 45/69,741
Int. Cl. C07c 5/18; B01j 9/20
U.S. Cl. 260—683.3 **12 Claims**



This invention relates to an improved method for the continuous production of olefin from saturated hydrocarbon in a fluidized bed reactor comprising a reacting vessel and a heating vessel having a lower chamber provided with a perforated plate therein, an upper chamber and an intermediate portion consisting of a plurality of conduits fluidly connected to both chambers in such an arrangement that the reacting vessel encloses at least the conduits of the heating vessel. To effect dehydrogenation of the material gas in the reacting vessel, a circulating stream containing solid particles fluidized and heated by a heating gas feed is created in the heating vessel, between both chambers through the conduits, whereby sufficient heat for the dehydrogenation is continuously transferred from the circulating stream in the heating vessel to a fluidized catalyst bed in the reacting vessel through the conduits.

3,754,052
ETHYLENE ALKYLATION RESULTING IN ALKYLATE WITH HIGH PROPORTION OF 2,3-DIMETHYLBUTANE

David M. Hoffman, Wilmington, Del., and Abraham Schneider, Lower Merion, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Jan. 14, 1972, Ser. No. 217,954
Int. Cl. C07c 3/54
U.S. Cl. 260—683.61 **16 Claims**

An improved method for the preparation of 2,3-dimethylbutane admixed with a branched C_8 alkylate mixture by sulfuric acid alkylation is provided in a two-stage process wherein isobutylene and ethylene are co-dimerized in the presence of isobutane and sulfuric acid under reaction conditions which favor the formation of 3,3-dimethyl-1-butyl sulfate, and thereafter the said 3,3-dimethyl-1-butyl sulfate is reacted with the isobutane under conditions which favor the formation of 2,3-dimethylbutane. This process is advantageous in that it permits the incorporation of ethylene into a sulfuric acid alkylation reaction without the formation of large amounts of unwanted ethyl sulfate.

3,754,053
POLYOXYMETHYLENE-OXYALKYLENE BLOCK POLYMERS

Raymond J. Kray, Berkeley Heights, and Robert W. Stevenson, Edison, N.J., assignors to Celanese Corporation of America, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 860,717, Dec. 21, 1959. This application May 15, 1964, Ser. No. 367,872
Int. Cl. C08g 1/14, 1/16/, 11/00
U.S. Cl. 260—823 **30 Claims**

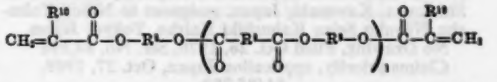
This application relates to block copolymers and more particularly to block copolymers having polyoxymethylene segments and segments having recurring oxyalkylene groups with more than one carbon atom.

3,754,054
RADIATION CURABLE COATING COMPOSITIONS AND PROCESS FOR THE PREPARATION THEREOF

Tadasu Kimura, Otake-shi, Hiroyuki Harada, Tokyo, and Juichi Kobayashi and Hideo Nakamoto, Otake-shi, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,272
Claims priority, application Japan, Dec. 23, 1968, 43/93,725
Int. Cl. B01j 1/10; C08f 27/12; C08g 39/10
U.S. Cl. 260—860 **16 Claims**

A coating composition useful for radiation curing is prepared through copolymerization of a mixture comprising a vinyl monomer having a hydroxyl group and α,β-ethylenically unsaturated carboxylic ester of a monohydric alcohol, primary esterification of the hydroxyl group of the resultant copolymer with a polyhydric carboxylic acid anhydride in an organic solvent, and secondary esterification and/or etherification of carboxylic group and/or hydroxyl group of the primarily esterified copolymer with an epoxy vinyl monomer. The coating composition may further contain polymerizable and/or cross-linkage formable compounds active for radiation curing, for example, a compound of the formula:



wherein R^8 is a divalent hydrocarbon group having 2 to 10C, R^9 is a saturated divalent hydrocarbon group of 2 to 10C, R^{10} is hydrogen atom or methyl group and l is 0 or 1 to 10.

3,754,055
CATIONIC VINYL-PYRIDINE COPOLYMERS AND PRODUCTS THEREOF

Alan Rembaum, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

No Drawing. Continuation-in-part of application Ser. No. 763,938, Sept. 30, 1968. This application Dec. 28, 1970, Ser. No. 102,239
Int. Cl. C08f *1/16, 7/12*
U.S. Cl. 260—879 17 Claims

Quaternized, cross-linked, insoluble copolymers of unsubstituted and substituted vinyl pyridines and a dihalo organic compound are spontaneously formed at ambient temperature on mixing the two monomers in bulk, in solution or in suspension. The amount of cross-linking may be varied according to the composition and reaction conditions. The polymer product exhibits ion exchange capacity and undergoes a reversible color change from black at a pH above 7 to yellow at a pH below 7. The polymer may be formed in the presence of preformed polymers, substrates such as porous or impervious particles or films to deposit an ion exchange film in situ or on the surface of the substrate. The coated or resin impregnated substrate may be utilized for separation of anionic species from aqueous solution.

3,754,056
ANTIOXIDANT COMPOSITIONS AND POLYMERS STABILIZED THEREBY

Gary A. Harpell, Brecksville, Ohio, assignor to Goodrich-Gulf Chemicals, Inc., Cleveland, Ohio

Original application Apr. 10, 1969, Ser. No. 815,147. Divided and this application Feb. 17, 1971, Ser. No. 116,266
Int. Cl. C08d *9/16*
U.S. Cl. 260—892 8 Claims

The reaction product of an organometallic compound and an organic nitro compound provides a stabilizing composition for elastomers. The stabilizing composition can be of low molecular weight, or can be polymeric in nature.

3,754,057
POLYMERS OF 5-(3-PERFLUOROALKYL-1,2,4-OXADIAZOLYL)OLEFINS

Pier Luigi Pacini, Brussels, Belgium, and Eduard Karl Kleiner, New York, N.Y., assignors to Ciba-Geigy Corporation

No Drawing. Original application June 16, 1969, Ser. No. 833,706. Divided and this application Nov. 17, 1971, Ser. No. 199,790
Int. Cl. C08f *29/50;* C08j *37/18*
U.S. Cl. 260—901 10 Claims

Monomeric 5-(3-perfluoroalkyl-1,2,4-oxadiazolyl)olefins form homopolymers and copolymers with other ethylenically unsaturated comonomers. The polymers obtained have valuable soil repellent and dyesite properties which are especially useful in textile finishes. Preferred compounds exemplified are 1,2-bis[5-(3-n-perfluoroheptyl-1,2,4-oxadiazolyl)]ethylene and 5-isopropenyl-3-n-perfluoroheptyl-1,2,4-oxadiazole.

3,754,058
O-PHENYL-S-ALKYL-N-ALKYL-PHOSPHORO-AMIDE-THIOLATES

Shigeo Kishino and Yasuo Yamada, Tokyo, and Akio Kudamatsu, Kawasaki, Shozo Sumi, Tokyo, and Kozo Shiokawa, Kawasaki, Japan, assignors to Nihon Tokushu Noyaku Seizo Kabushiki Kaisha, Tokyo, Japan

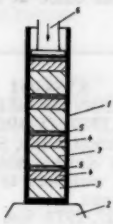
No Drawing. Filed Oct. 26, 1970, Ser. No. 84,198
Claims priority, application Japan, Oct. 27, 1969, 44/85,283
Int. Cl. A01n *9/36;* C07f *9/16*
U.S. Cl. 260—949 14 Claims

O-phenyl-S-alkyl-N-alkyl-phosphoroamido-thiolates, i.e. O-[(optionally mono nitro, phenyl and alkylmercapto or optionally mono nitro, phenyl or alkylmercapto and mono to tri halogen or alkyl-substituted)-phenyl] - S - (alkyl, alkenyl, haloalkyl and phenylalkyl)-N-(alkyl and cycloakyl) - phosphoroamido - thiolates or -amido-thiolphosphoric acid esters, which possess insecticidal, acaricidal and nematocidal properties and which may be produced by conventional methods.

3,754,059
METHOD FOR THE MANUFACTURE OF A QUASI-HOMOGENEOUS FORMATION

Gustav Prantl, Brugg, and Istvan Horvath, Wettingen, Switzerland, assignors to Gesellschaft zur Forderung der Forschung an der Eidg. Techn. Hochschule, Zurich, Switzerland

Filed June 12, 1970, Ser. No. 45,628
Claims priority, application Switzerland, June 20, 1969, 9,408/69
Int. Cl. G21c *21/04*
U.S. Cl. 264—.5 2 Claims



A method of manufacturing a quasi-homogeneous formation from a plurrality of separate particles of different size. The particles are separated into fractions according to size, which fractions together are required for filling a certain container volume. The amount of each fraction is determined so that when the particles are within the container, the smaller particles will fill out the hollow space between the larger particles. The determined amounts of all fractions are divided into several partial amounts. The container is then filled with the partial amounts in regularly distributed arrangement. Thereafter the uppermost particle layer, to avoid decomposition, is loaded by a pressure force, and the container is exposed to a vibration to reduce the spaces between the particles, thereby creating a quasi-homogeneous formation.

3,754,060
PROCESS FOR PRODUCTION OF PROPELLANT CHARGES COMPRISING COMPRESSING GEOMETRICALLY SHAPED POWDERS TOGETHER

Heinz Gawlick, Furth, Bavaria, and Günther Marondel, Erlangen, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,370
Claims priority, application Germany, Aug. 1, 1970, P 20 38 288.1
Int. Cl. C06b *21/02*
U.S. Cl. 264—3 C 11 Claims

A process for producing shaped powder articles for propellant charges by pressing porous powder grains having external geometric shapes exhibiting edges, spikes or the like which permit the grains to interlock with each other. Preferably the grains have T, X, Y, or V-shapes. Also disclosed are shaped powder articles produced by this process.

3,754,061

METHOD OF MAKING SPHEROIDAL HIGH EXPLOSIVE PARTICLES HAVING MICROHOLES DISPERSED THROUGHOUT

Charles D. Forrest, Martinsburg, W. Va., and Cecil G. Miller, Jr., Hagerstown, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 13, 1971, Ser. No. 171,429
Int. Cl. C06b 21/02
U.S. Cl. 264—3 D 16 Claims

Crystalline high explosives are formed into finely-divided spheroidal particles by mixing separate streams of a solution of the explosive dissolved in solvent with an inert nonsolvent so as to obtain nonlaminar flow of the streams by applying pressure against the flow of the nonsolvent stream so as to diverge said stream as it contacts the solution of explosive in solvent and violently agitating the combined stream to rapidly precipitate the explosive from solution in the form of spheroidal particles permeated with microholes. The resulting high explosive consists essentially of spheriodal particles, the particles consist of agglomerated crystallites that are substantially spherical. The spheroidal particles have microholes that have an average diameter of about from 0.1–0.2 micron dispersed throughout the particles in large number.

3,754,062

METHOD FOR ENCAPSULATION OF HYDROPHOBIC MATERIALS UTILIZING URETHANE ELASTOMERS

Takehiko Kobayashi, 1–4–15–415 Yamanone-cho, Zushi-shi, Kanagawa-ken, Japan

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,353
Claims priority, application Japan, Aug. 21, 1970, 45/72,750
Int. Cl. A61j 5/00; B29c 13/00
U.S. Cl. 264—4 7 Claims

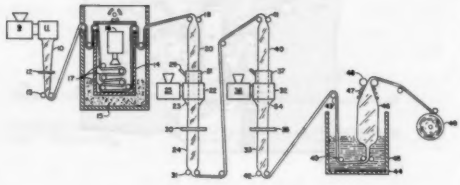
A method is disclosed for encapsulating hydrophobic materials by applying an admixture of urethane elastomer and epichlorohydrin in droplets to a polyamine solution so that polymerization proceeds at the interface between the hydrophobic liquid phase and the aqueous phase to deposit a capsular film on hydrophobic liquid droplets.

3,754,063

METHOD FOR CASTING AN INFLATED TUBULAR POLYETHYLENE FILM WITH MIXED POLYMER OF POLYPROPYLENE-POLYBUTENE-1

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Continuation-in-part of application Ser. No. 659,940, Aug. 11, 1967, which is a continuation-in-part of application Ser. No. 768,955, Sept. 23, 1968. This application Mar. 23, 1970, Ser. No. 21,793
The portion of the term of the patent subsequent to Sept. 21, 1988, has been disclaimed
Int. Cl. B29d 9/08
U.S. Cl. 264—22 4 Claims



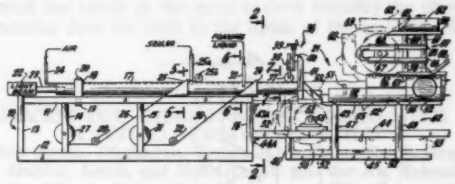
A laminated, tubular, thermoplastic film having excellent packaging and shipping abuse characteristics produced by continuously extruding a layer of an ethylene vinyl acetate copolymer onto a tubular substrate of a predominantly ethylene polymer material and continuously extruding an admixed isotactic polypropylene, polybutene-1 and atactic polypropylene polymer layer as the outer layer thereon and then orienting the resulting laminate. Prior to orienting, the laminate is heated in hot water.

3,754,064

METHOD FOR MAKING HOLLOW TUBING HAVING AN ANNULAR WALL OF FOAMED MATERIAL

Charles D. Snelling, Allentown, Theodore E. Andrews, Kutztown, and John J. Weller, Emmaus, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Sept. 4, 1970, Ser. No. 69,661
Int. Cl. B29d 23/08, 27/04
U.S. Cl. 264—40 8 Claims



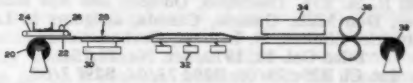
A method for continuously forming hollow tubing of foam material comprising a mandrel fixed at one end about which said tubing is formed from a web of material by confining the foam material within an annular space of an envelope of flexible laminar material which is allowed to foam and expand and the envelope of confined foamed material then moved longitudinally of said mandrel and thereafter cured while moving along said mandrel. In order to assure cross-sectional symmetry or concentricity of the hollow tubing, means are provided for aligning the mandrel by controlling its flexure to a position which will provide a product having the desired concentricity, and means associated with a region of the mandrel away from the fixed end for detecting variations in alignment from the desired alignment, whereby when a variation in alignment is detected, the means for aligning the mandrel is actuated to compensate for the detected variation.

3,754,065

METHOD OF MAKING A FLOOR COVERING INCLUDING PLACING CHIPS IN A GRID PATTERN

John F. Hofmann, and David H. Reed, Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

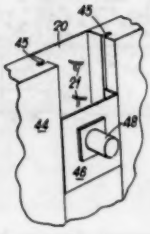
Filed Mar. 9, 1970, Ser. No. 17,669
Int. Cl. B29c 17/00, 21/00, 23/00
U.S. Cl. 264—70 1 Claim



The sheet material is provided with a plurality of pockets in a grid-like pattern. A plurality of chips sized to fit

in the pockets are dumped upon the sheet material. The sheet material passes across a horizontal vibrating table which positions the chips in the pockets of the grid. The sheet material then passes across a slanted vibrating table which removes excessive chips from the sheet material. The chips are now consolidated to the sheet material by appropriate heat and pressure.

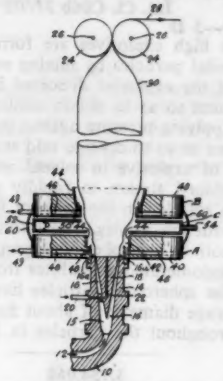
3,754,066
METHOD OF COATING OR LINING A STRUCTURAL SURFACE
William Brown Black, Penwold, Kilbarchan Road, Bridge of Weir, Scotland
Filed Aug. 27, 1971, Ser. No. 175,512
Claims priority, application Great Britian, Sept. 1, 1970, 41,776; Jan. 28, 1971, 3,427; Apr. 3, 1971, 8,600
Int. Cl. B28b *1/08*; F27d *1/16*
U.S. Cl. 264—71 **9 Claims**



In the cladding, that is coating or lining, a structural surface with a cementitious compound, for example a refractory concrete, there is disposed adjacent said surface a mould open onto said surface and the cementitious compound is filled into said mould while the mould is vibrated to compact said compound. The surface to be clad preferably has secured thereto to project forwardly therefrom nonlinear ties adapted to key into the cladding and the mould is made up of vertical guide members releasably secured to said surface and guiding for upwards displacement parallel to said surface a shutter plate making up with said guide members said mould open onto said surface, the shutter plate being raised, if necessary with mechanical assistance, while the cementitious compound is being filled into said mould and said shutter plate is being vibrated to compact said compound. The apparatus is dismounted from said structural surface, and remounted at another portion of said surface and utilized to form blocks of cementitious material bonded to said surface at small intervals apart in the horizontal direction. A second shutter plate bridges between said block and is utilized to fill the space between said blocks with a cementitious compound.

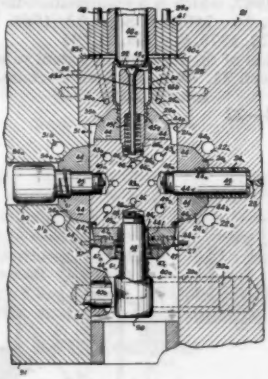
3,754,067
BLOWN TUBE PRODUCTION
Daniel R. St. Eve, Thornhills, Ontario, and Ajit Kumar Bose, Don Mills, Ontario, Canada, assignors to Leco Industries Limited, St. Laurent, Quebec, Canada
Filed Oct. 12, 1970, Ser. No. 79,754
Int. Cl. B29c *25/00*; B29d *23/04*; B29f *3/08*
U.S. Cl. 264—89 **10 Claims**

The invention provides a novel process for producing, by the blown tube process, film having improved and balanced characteristics. The improved film is characterized by crystallites dispersed throughout the film in amorphous areas and which is substantially free of crystalline formations, as well as having improved other properties. The process disclosed employs, the steps of acting on a molten tube following extrusion to cool it to a temperature above



the crystalline formation temperature, followed by an annealing step and a solidification step. The apparatus for the process includes first cooling means, in annnealing and a further cooling chamber or means.

3,754,068
MANUFACTURE OF PLASTIC BOTTLES BY INJECTION AND BLOW MOLDING
Lazzaro A. Fattori, 84 Rose Ave., Woodcliff Lake, N.J. 07675
Original application Apr. 8, 1968, Ser. No. 719,384, now Patent No. 3,609,803, dated Oct. 5, 1971. Divided and this application Dec. 15, 1969, Ser. No. 889,792
Int. Cl. B29c *17/07*
U.S. Cl. 264—97 **6 Claims**



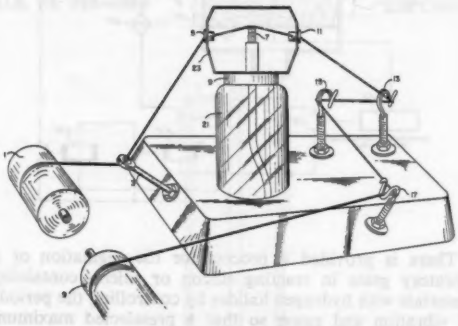
A continuous method of injection blow molding thermoplastic material into hollow articles preferably performed in four simultaneous steps at stations in predetermined relation to each other during time periods of equal

time duration. The method includes injection molding a parison on a core, blowing the parison into the article, cooling the blown article while on the core, and ejecting the blown and cooled article from the core, the length of said equal time periods being determined by and limited to the time requirements for the injection molding step.

3,754,069
METHOD OF FABRICATING PLIABLE POLYFILAMENTOUS PLASTIC STRANDS

Joseph H. Adams, Vernon, Conn., and Leonard D. Kurtz, Woodmere, N.Y., assignors to Sutures, Inc., Coventry, Conn.

Continuation of abandoned application Ser. No. 843,987, July 23, 1969. This application Aug. 23, 1971, Ser. No. 174,142
Int. Cl. B29c *17/02*; A61l *17/00*
U.S. Cl. 264—131 **8 Claims**

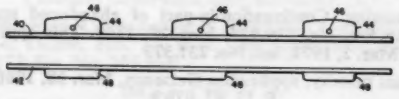


Fabrication of pliable polyfilamentous strands by impregnating the strand with an oil of lubricating viscosity, hot-stretching the impregnated strand, removing the oil of lubricating viscosity, water-washing the strand and impregnating the strand while wet with inert, polymeric particles to provide a polyfilamentous strand of improved softness and pliability.

3,754,070
FLASH FREE MOLDING

Thomas A. Dunn, Mesa, and Arthur V. Fant, Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 3, 1970, Ser. No. 60,339
Int. Cl. B29b *6/00*; H01b *13/00*
U.S. Cl. 264—272 **3 Claims**

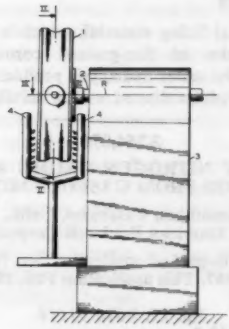


When plastic encapsulating a device such as an integrated circuit having leads, the leads must extend out of the mold that is used in the encapsulating. The plastic material has a tendency to run out of the mold cavities and around the leads, impeding the use of the encapsulated device. To prevent this running out, tape is applied to both sides of the leads before the device is put into the mold. The tapes may be sticky on their contacting sides or they may be stuck together by heat staking or spot welding. When the mold is closed on the taped leads, any plastic material that runs out of the mold and along the leads will be outside of the plastic material that encompasses the leads and this plastic material will be peeled off when the sticky tape is peeled off. Since the plastic material has a tendency to stick to the inside of the mold cavities, plastic sheets having bubbles therein somewhat smaller than the mold cavities are applied to both sides of device to be encapsulated, the tape holding the leads, and the bubbles enclosing the device and a portion of the leads and connections between the device and the leads, and then the device so covered is put into the mold cavities. Holes are provided in the bubbles to permit access of molding material and the plastic material does not touch the inside of the mold cavities whereby the plastic material does not stick to the inside of the mold cavities.

3,754,071
PROCESS FOR IMPREGNATING BODIES WITH A CASTING RESIN COMPOSITION

Otto Ernst, Pfeffingen, Eugen Kusenberg, Basel, Ernst Hubler, Aesch, and Hans-Rudolf Aus der Au, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy A.G.

Filed Aug. 20, 1970, Ser. No. 65,486
Claims priority, application Switzerland, Aug. 21, 1969, 12,704/69
Int. Cl. B44d *1/09, 1/42*
U.S. Cl. 264—272 **7 Claims**



A body to be impregnated, such as an electrical winding, is placed in a cavity where it is preferably held by a mould insert and the two members are clamped together and rotated about an axis lying outside the space enclosed by any cavity. The cavity and body are preheated by heating means and a highly reactive casting resin composition, which includes a filler, which is capable of hardening and solidifying within a period of from 1 to 60 minutes, and of which the resin is preferably an epoxy resin is introduced into the chamber from whence it flows under centrifugal action in the cavity to impregnate the body. The resin composition is allowed to harden and solidify under pressure caused either by the centrifugal action or by a pressure medium, and the impregnated body is then removed. The cavity is preheated to a temperature sufficient to initiate the hardening reaction of the casting resin composition and the temperature at which the casting resin composition is introduced is at least 10% below the temperature of the cavity, both such temperatures being measured in degrees centigrade.

3,754,072

PROCESS FOR RECOVERING VANADIUM OXIDE

Mitsuhiro Sato, Nisshin, Takeshi Yano, Shippo, Katsunosuke Hara, Kariya, Yuzo Nawa and Katsuhiro Maruyama, Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,899

Claims priority, application Japan, Dec. 24, 1970, 45/117,203

Int. Cl. C01g *31/00*

U.S. Cl. 423—66 6 Claims

The recovery of vanadium oxide comprises a stabilizing step wherein the distilled residue fractionated from crude titanium tetrachloride is contacted with superheated stream uniformly in the presence of air, carbonic acid gas and carbon monoxide or is mixed with water uniformly and then the mixture is heated and a recovering step wherein the stabilized residue is dissolved in an aqueous alkali solution or roasted together with an alkali salt.

3,754,073

PROCESS FOR MANUFACTURE OF ZIRCONIUM TETRACHLORIDE IN REACTOR OF SPECIFIC LINING

Ferdinand Langenhoff, Mondorfer-Str. 9, 5211 Ranzel-Deutz, Erich Termin, Kraftwerkeg 4, 7887 Laufenburg, Arnold Lenz, Gerstenkamp 7, 5 Cologne-Stammheim, and Georg Schinke, Feldmuhlestr. 2, 5211 Ranzel, Germany

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,333

Claims priority, application Germany, Oct. 2, 1969, P 19 49 758.6

Int. Cl. C01g *25/02, 25/04*

U.S. Cl. 423—79 4 Claims

Use of a novel lining material, which is a shakable or tampable mixture of fine-grained corundum and as binder, the partial water hydrolysis product of silicon and aluminum alcoholates diluted with a suitable solvent.

3,754,074

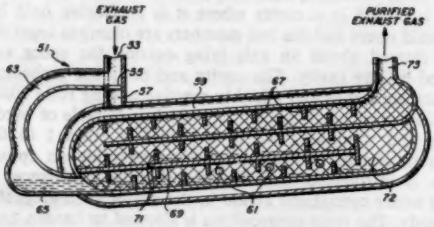
REMOVAL OF NITROGEN OXIDES AND OTHER IMPURITIES FROM GASEOUS MIXTURES

Le Roy F. Grantham, Calabasas, Calif., assignor to North American Rockwell Corporation

Continuation-in-part of application Ser. No. 684,239, Nov. 20, 1967. This application Feb. 20, 1970, Ser. No. 13,248

Int. Cl. B01d *53/34*

U.S. Cl. 423—210.5 19 Claims



A method for removing nitrogen oxides, lead compounds, and other gaseous and particulate impurities from waste gases by contacting the waste gases with a molten alkali metal carbonate mixture. Dependent upon the particular impurity removed, such as nitrogen oxides, the absorbent carbonate mixture is regenerated by treatment with a reducing agent.

3,754,075

TEMPERATURE REGULATING PROCESS FOR VIBRATORY GRATE REACTORS

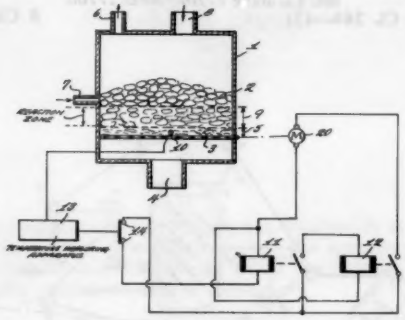
Heinz-Rüdiger Vollbrecht, Rheinfelden, Baden, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Jan. 18, 1971, Ser. No. 106,978

Claims priority, application Germany, Jan. 23, 1970, P 20 02 904.3

Int. Cl. C01b *33/08*

U.S. Cl. 423—343 9 Claims



There is provided a process for the regulation of a vibratory grate in reacting silicon or silicon containing materials with hydrogen halides by controlling the periods of vibration and pause so that a preselected maximum temperature is not exceeded.

3,754,076

PRODUCTION OF SILICON CARBIDE FROM RICE HULLS

Ivan B. Cutler, Salt Lake City, Utah, assignor to University of Utah

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,698

Int. Cl. C01b *31/36, 53/02, 47/00*

U.S. Cl. 423—345 8 Claims

This invention discloses the production of silicon carbide from the silica and carbon present in rice hulls.

3,754,077

PROCESS OF OBTAINING SILICON TETRAHALIDES

Manfred Kruger, Grossauheim, and Eugen Meyer-Simon, Frankfurt am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideansalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 810,929, May 25, 1969. This application Mar. 2, 1972, Ser. No. 231,373

Claims priority, application Germany, Mar. 28, 1968, P 17 67 078.9

Int. Cl. C01b *33/08*

U.S. Cl. 423—341 7 Claims

Silicon tetrahalides are made or the contents thereof in silane mixtures is increased by passing a halogenosilane or a mixture of halogenosilanes of the formula

$$H_nSiX_{4-n}$$

wherein X is halogen and if several X are present all of them may be the same or different, and *n* is 1–3, together with a hydrogen halide through a bed of inert solid particulate large-surface catalyst selected from the group of activated carbon, finely divided aluminum oxide and finely divided silicon dioxide, the reaction being carried out at a temperature between 200 and 800° C.

3,754,078

METHOD FOR OBTAINING UNIFORM DISTRIBUTION OF GAS FLOW THROUGH CATALYST BEDS

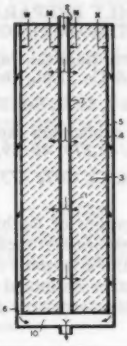
Helmut Hinrichs, Leonding, near Linz (Danube), Heinz Lehner, Anton Wagner, Josef Pesl, Johann Niedetzky, and Franz Faschinger, Linz (Danube), Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz (Danube), Austria

Filed Apr. 20, 1971, Ser. No. 135,639

Claims priority, application Austria, Apr. 21, 1970, A 3,596/70

Int. Cl. C01c *1/04;* B01j *9/00*

U.S. Cl. 423—359 6 Claims



Uniform distribution of gas is achieved in catalyst beds in which the flow is radial in reactors for catalytic exothermic high pressures syntheses by gradation of the free surface exposed to flow and serving for the passage of gas into or out of the catalyst layer so that it is 10 to 25 times greater at the first quarter of the catalyst layer than is the free area exposed to flow at the remaining part of the catalyst layer.

3,754,079

PROCESS OF PREPARING CHLORINE DIOXIDE

Joseph Callerame, Rochester, N.Y., assignor to Chemical Generators, Inc., Rochester, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 15,290, Feb. 27, 1970. This application May 19, 1972, Ser. No. 255,018

Int. Cl. C01b *11/02*

U.S. Cl. 423—479 8 Claims

Chlorine dioxide is prepared by reacting nitrosyl chloride with a chlorite or chlorate of an alkali metal or alkaline earth metal. The nitrosyl chloride necessary for the reaction is advantageously prepared in situ by the reaction of nitric acid and a metal chloride such as an alkali metal chloride.

3,754,080

AUTOTHERMIC PROCESS FOR THE PRODUCTION OF ALUMINUM TRIFLUORIDE

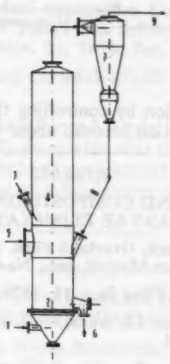
Claudio Sperandio, Carlo Boscolo, and Vittorio Jaderosa, Mestre, and Antonio Savino, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Jan. 25, 1971, Ser. No. 109,362

Claims priority, application Italy, Jan. 27, 1970, 19,826/70

Int. Cl. C01f *7/50, 7/02*

U.S. Cl. 423—489 3 Claims



A continuous autothermic process for the production of high purity aluminum trifluoride is disclosed, wherein partially dehydrated alumina is introduced in a hot state into a pre-heated fluid bed reactor, wherein it is contacted with overheated HF vapors. The feeding temperature of the partially dehydrated alumina is between 140° and 160° C. The partial dehydration of the alumina from the trihydrate to the monohydrate is achieved by a thermal treatment, at 150°–190° C., of a trihydrated alumina in such a way that the quantity of monohydrate as a result of the dehydration shall not exceed 15–20% of the total. The trihydrated alumina to be partially dehydrated has a granulometric distribution that 67–85% of it has dimensions exceeding 325 mesh.

3,754,081

PROCESS FOR THE PRODUCTION OF CHLORINE DIOXIDE, CHLORINE AND A MIXTURE OF AN ALKALI METAL SULFATE AND BISULFATE

Harold deVere Partridge, Wilson, Blaine O. Schoepfle, Snyder, Arthur C. Schulz, North Tonawanda, and Herbert J. Rosen, Yonkers, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 710,648, Mar. 5, 1968. This application Sept. 17, 1970, Ser. No. 72,925

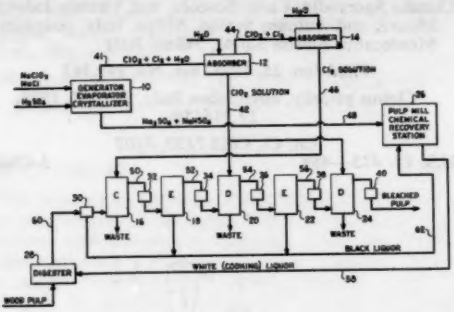
The portion of the term of the patent subsequent to Feb. 16, 1988, has been disclaimed

Int. Cl. C01d *5/02;* C01b *11/02, 7/02*

U.S. Cl. 423—520 10 Claims

Chlorine dioxide, chlorine and a mixture of an alkali metal sulfate and a bisulfate for use in supplying sodium and sulfur values to a cooking liquor employed in the kraft process for delignifying wood to produce a pulp suitable

for bleaching is produced by the reaction of an alkali metal chlorate, an alkali metal chloride and sulfuric acid



in aqueous solution by controlling the acid normality of the aqueous solution between about 4 to about 6 normal.

3,754,082

PROCESS AND COMPOSITION FOR BOTFLY LARVAE ELIMINATION

Richard J. Mack, Overland Park, Kans., assignor to Richardson-Merrell, Inc., New York, N.Y.

No Drawing. Filed June 11, 1970, Ser. No. 45,580

Int. Cl. A61k 9/00, 27/00

U.S. Cl. 424—33 16 Claims

Treatment of equine with choline xanthate to eliminate botfly larvae from the gastrointestinal tract of equines is disclosed. Novel choline xanthate compositions in coated and uncoated form are disclosed as effective for such treatment.

3,754,083

ANTIBIOTICS T–7545 AND PROCESS OF PRODUCING SAME

Motto Shibata, Toyonaka, Takashi Iwasa, Kyoto, Hiroichi Yamamoto, Kobe, Mitsuko Asai, Takatsuki, and Komei Mizuno, Settsu, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 28, 1969, Ser. No. 871,899

Claims priority, application Japan, Oct. 29, 1968, 43/78,720; Sept. 20, 1969, 44/74,855

Int. Cl. A61k 21/00

U.S. Cl. 424—118 4 Claims

A new antibiotic T–7545 (Validamycin) is produced by culturing strains of microorganisms belonging to the genus streptomyces. Compositions containing the antibiotics are useful for controlling diseases in plants.

3,754,084

STABILIZED COMPOSITION FOR POULTRY AND LIVESTOCK CONTAINING A VITAMIN B_2 COMPOUND AND A MACROLIDE ANTIBIOTIC

Kuniyoshi Fujie, Takatsuki, Sadao Kondo and Kazuo Hara, Kawanishi, Yoshihiro Okada, Toyonaka, and Yoshitatsu Hayashi, Suita, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,368

Claims priority, application Japan, Oct. 26, 1970, 45/94,525

Int. Cl. A61k 21/00, 27/00

U.S. Cl. 424—181 13 Claims

A composition for poultry and livestock comprising a vitamin B_2 compound such as vitamin B_2, a macrolide antibiotic such as tylosin and a phenol compound such as salicyclic acid, which composition is stable even in aqueous solution.

3,754,085

PHOSPHONIC ACID ANTI-FIBRINOLYTIC AGENTS

Burton G. Christensen, Scotch Plains, N.J., William J. Leanza, Staten Island, N.Y., and Lewis H. Sarett, Skillman, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application June 11, 1970, Ser. No. 45,555. Divided and this application July 19, 1971, Ser. No. 164,047

Int. Cl. A61k 27/00

U.S. Cl. 424—211 1 Claim

Novel substituted or unsubstituted benzene and cyclohexane phosphonic acids. The phosphonic acids disclosed herein are potent anti-fibrinolytic agents. Also included herein are pharmaceutical compositions containing said phosphonic acid compounds as an active ingredient and methods of treating fibrinolytic states in patients by administering said compounds. Further encompassed is a substituted benzene phosphonic acid known to the art having novel anti-fibrinolytic activity.

3,754,086

STABLE OILY PREPARATIONS OF EPITHIO-STEROIDS

Shokei Fujisawa, Itamishi, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Filed June 7, 1971, Ser. No. 150,529

Claims priority, application Japan, June 8, 1970, 45/49,279, 45/49,280

Int. Cl. C07c 173/00

U.S. Cl. 424—241 35 Claims

Stable oily preparations of eipthio-steroids useful as a pharmaceutical or veterinary medicine in their strong anti-progestational, anti-estrogenic myogenic, anti-lipeamic, androgenic, and other hormonal activities are prepared by adding an epithio-steroid to an oil having a low peroxide value.

3,754,087

2 - HALOMETHYL - 3 - CARBOXYLIC ACID-AMIDO-QUINOXALINE - 1,4-DI-N-OXIDES AS ANTIBACTERIAL AGENTS AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAID OXIDES

Kurt Ley, Odenthal-Globusch, Ulrich Kholzer, Cologne-Stammheim, Roland Nast, Cologne-Buchheim, Karl Georg Metzger, Wuppertal-Elberfeld, and Dieter Fritsche, Wuppertal-Vohwinkel, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft

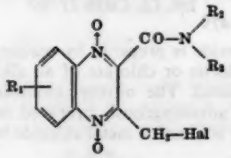
No Drawing. Original application Oct. 2, 1968, Ser. No. 764,610, now Patent No. 3,557,109, dated Jan. 19, 1971. Divided and this application Nov. 12, 1969, Ser. No. 871,269

Claims priority, application Germany, Oct. 4, 1967, F 53,667

Int. Cl. A61k 27/00

U.S. Cl. 424—250 39 Claims

2-halomethyl-3-carboxylic acid-amido-quinoxaline-1,4-di-N-oxides of the formula:



(I)

wherein:

R_1 is hydrogen, lower alkyl, lower alkoxy or chlorine,
R_2 is hydrogen, straight or branched chain alkyl or straight or branched chain alkyl substituted by hydroxy, lower alkoxy, acyloxy, monoalkylamino or dialkylamino,
R_3 is hydrogen, straight or branched chain alkyl, straight or branched chain alkyl substituted by hydroxy, lower alkoxy, acyloxy, monoalkylamino or dialkylamino, or when R_2 is hydrogen, cyclohexyl, or R_2 and R_3 together with the amide nitrogen atom form part of a 5- or 6-membered heterocyclic ring, and Hal is chlorine or bromine, in combination with a pharmaceutically acceptable inert carrier are useful for their antibacterial effect.

These compositions or the active compound can be administered subcutaneously or orally to humans or animals.

3,754,088

PIPERIDONE ANTI-INFLAMMATORY AGENTS

Bruce E. Witzel, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 17, 1971, Ser. No. 144,333

Int. Cl. A01n *27/00*

U.S. Cl. 424—267 7 Claims

Methods and compositions for the treatment of inflammation, pain and fever employing piperidones and thiopiperidones.

3,754,089

METHOD OF INHIBITING FERTILITY IN FEMALE MAMMALS

Walter Edward Meyer, Suffern, and Leon Goldman, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Aug. 31, 1971, Ser. No. 176,719

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 1 Claim

This disclosure describes compositions of matter useful as oral female antifertility agents and the method of inhibiting fertility in female mammals therewith, the active ingredient of said compositions of matter being coronaridine, a known alkaloid of the iboga type.

3,754,090

PHARMACEUTICAL COMPOSITIONS AND METHODS FOR SUBSTITUTED PHENETHYL ALCOHOLS AND THEIR ESTERS

Ulrich Renner, Riehen, Switzerland, Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Original application Apr. 22, 1969, Ser. No. 818,409, now Patent No. 3,631,069, dated Dec. 28, 1971. Divided and this application Sept. 16, 1971, Ser. No. 181,222

Claims priority, application Switzerland, Apr. 29, 1968, 6,378/68

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 12 Claims

Compounds of the class of p-(1-pyrryl)-phenethyl alcohols and alkanoyl esters thereof have analgesic and anti-inflammatory properties; they are active ingredients of pharmaceutical compositions and are useful for alleviating pain and treating inflammatory diseases; illustrative embodiments are p-(1-pyrryl)-phenethyl alcohol and the propionic acid ester thereof.

3,754,091

SUBSTITUTED ANTHRANILIC ACID DERIVATIVES AS ANTI-INFLAMMATORY AGENTS

Alfred Sallmann, Bottmingen, and Rudolf Pfister, Basel, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Original application Dec. 9, 1968, Ser. No. 782,485, now Patent No. 3,590,039. Divided and this application Nov. 24, 1970, Ser. No. 92,522

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 2 Claims

N-(α,α,α,α',α',α'-hexafluoro-3,5-xylyl)-anthranilic acid and pharmaceutically acceptable salts thereof with a base are active ingredients in pharmaceutical compositions useful for the treatment of inflammatory diseases.

3,754,092

CONTROL OF MYCOPLASMA IN ANIMALS WITH GROWTH PROMOTION

Paul A. Sartoretto, North Brunswick, N.J., assignor to W. A. Cleary Corporation, Somerset, N.J.

No Drawing. Filed Oct. 7, 1970, Ser. No. 78,918

Int. Cl. A61k *27/00*

U.S. Cl. 424—328 8 Claims

The method of preventing or controlling mycoplasma infection in an animal with simultaneous growth promotion by feeding an animal a feed containing a tetraalkylthiuram disulfide. The method is particularly useful in poultry.

3,754,093

METHOD FOR PROTECTING PLANTS FROM POWDERY MILDEW FUNGUS AND FUNGICIDAL COMPOSITION TO BE USED THEREFOR

Kenji Shigezane, Mie, Ryuzo Nishiyama, Kyoto, Kanichi Fujikawa, and Kiroyuki Mori, Shiga, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

No Drawing. Filed Apr. 28, 1970, Ser. No. 32,761

Int. Cl. A01n *9/20*

U.S. Cl. 424—326 27 Claims

A method for protecting plants from powdery mildew fungus by applying to said plants at least one amidine compound selected from the class consisting of compounds represented by the formula

$$R^1—NHC(=NH)—R^2$$

wherein R^2 represents an alkyl group and R^1 represents a group selected from the group consisting of phenyl and naphthyl groups having from 0 to 2 substituents selected from the group consisting of halogen atoms, alkyl, nitro and alkoxy groups and addition salts of said compounds with acids. Also contemplated are fungicidal compositions for the control of powdery mildew fungus containing the above-mentioned compounds as the active ingredients.

3,754,094

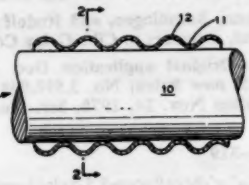
CABLE WITH WELDED CORRUGATED METAL SHEATH

Gerhard Ziemek, and Gert Nordmann, both of Hannover, Germany, assignors to Habel-un Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Division of Ser. No. 109,099, Jan. 25, 1971, Pat. No. 3,710,828. This application Oct. 3, 1972, Ser. No. 294,626

Int. Cl. H01b 7/22

U.S. Cl. 174—102 A 7 Claims



A tubular metal cable sheath formed from a steel tape converted to tubular shape with the side edges thereof in abutting relation to provide a longitudinal seam which is welded. The tubing may be transversely corrugated to increase the flexibility thereof; the tubing in plain or corrugated form being useful as conduit means or as sheathing for electrical cable. The steel from which the tape is formed has a specified carbon, manganese and silicon content to improve diverse properties of the fabricated tubing, including the welded seam thereof and the welding procedure.

3,754,095

SUPERCONDUCTIVE CABLE FOR CARRYING EITHER ALTERNATING OR DIRECT CURRENT

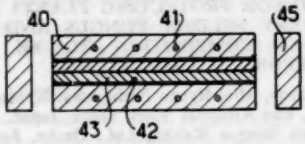
Marcel Aupoix, Paris; Francois Moisson Frackhauser, Bretigny-sur-Orge, and Jean Royet, Orsay, all of France, assignors to Compagnie Generale D'Electricite, Paris, France

Division of Ser. No. 887,848, Dec. 24, 1969, Pat. No. 3,600,498. This application Nov. 17, 1970, Ser. No. 90,437

Claims priority, application France, Dec. 26, 1968, 180 800

Int. Cl. H01b 5/00, 7/34

U.S. Cl. 174—126 CR 8 Claims



A cable for cryogenic connection having one or more pairs of conductive layers insulated electrically from each other and consisting of several super-conductors arranged in spiral formation over the opposing surfaces of the conductive layers.

3,754,096

COLOR TELEVISION SIGNAL REPRODUCING SYSTEM

Hiromichi Kurokawa, Atsugi-shi, Kanagawa, and Yasuharu Kubota, Fujisawa-shi, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

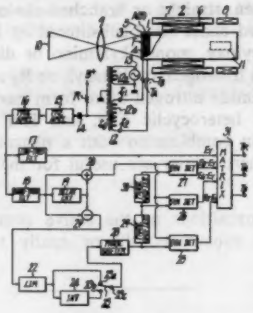
Filed Nov. 26, 1971, Ser. No. 202,469

Claims priority, application Japan, Nov. 27, 1970, 45/105215

Int. Cl. H04n 9/06

U.S. Cl. 178—5.4 ST 4 Claims

A phase modulated color video signal, for example, from a color television camera, is directly converted into an NTSC signal, without demodulation of the color signal components, by amplitude modulating the phase modulated color video signal with a signal of a frequency twice as high as the carrier frequency of the phase modulated color video signal, and then deriving a vector converted color video signal from the result of such amplitude modulation.



3,754,097

COLOR TELEVISION CAMERA

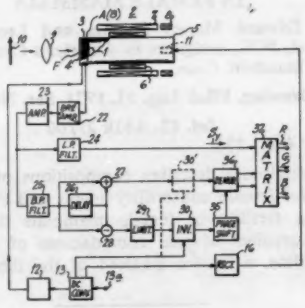
Susumu Tagawa, Kamakura-shi, Kanagawa-ken, and Yasuharu Kubota, Fujisawa-shi, Kanagawa-ken, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 23, 1972, Ser. No. 265,517

Claims priority, application Japan, Nov. 17, 1971, 46/92279

Int. Cl. H04r 9/06

U.S. Cl. 178—5.4 ST 9 Claims



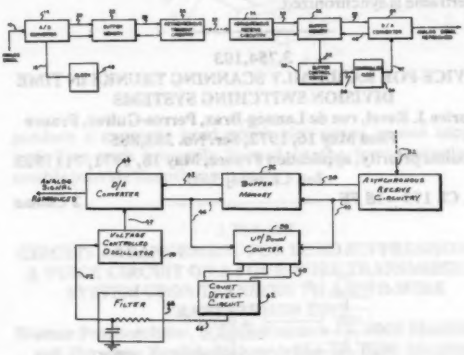
A color television camera utilizing a vidicon tube that has a filter in the form of alternate stripes for the primary colors red, green and blue, a pair of electrodes for each set of three stripes and a photoconductive layer. An alternating voltage produced by a DC-DC converter is applied to the electrodes to provide a predetermined pattern on the surface of the photoconductive layer with the image to be reproduced. The composite signal on the photoconductive layer of an index signal and a color video signal is fed back through the same terminals that applied the alternating voltage to the electrodes to a circuit which separates the color video signal from the index signal. The index signal is then applied to three demodulators to obtain the color video signals. The circuit which separates the index and chrominance signals operates under the control of an output signal from the DC-DC converter which also supplies the alternating voltage to the electrodes.

3,754,098

ASYNCHRONOUS SAMPLING AND RECONSTRUCTION FOR ASYNCHRONOUS SAMPLE DATA COMMUNICATION SYSTEM

Carl N. Abramson, and Douglas G. Jones, both of Somerville, N.J., assignors to Adaptive Technology, Inc., Piscataway, N.J.

Filed Oct. 8, 1971, Ser. No. 187,697
Int. Cl. H04j 3/06
U.S. Cl. 178—69.5 R 11 Claims



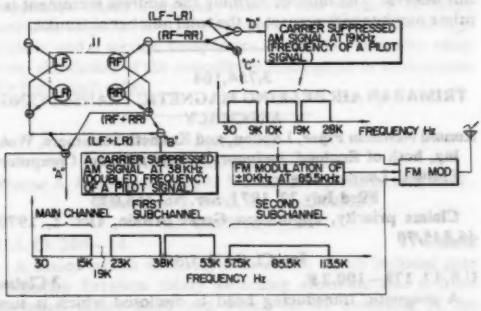
A system and method for deriving a decoding rate to be used by a periodic decoder in reconstructing an analog or voice waveform from asynchronously received sample data that was generated at an unknown and possibly changing periodic encoding rate. Sample data representing a particular defining characteristic of a waveform at unknown but substantially uniformly spaced times is received asynchronously at a generally non-uniform rate. The sample data is stored in a buffer memory until used by a periodic decoder to reconstruct the waveform. The rate at which the periodic decoder uses samples to reconstruct the waveform is adjusted in accordance with the number of samples stored in the buffer such that the number of stored samples tends toward a median number.

3,754,099

FOUR CHANNEL STEREOPHONIC BROADCASTING SYSTEM

Saburo Takaoka, Kohoku-ku, Yokohama-shi, Kanagawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 9, 1971, Ser. No. 196,932
Claims priority, application Japan, Nov. 9, 1970, 45/98513
Int. Cl. H04h 5/00
U.S. Cl. 179—15 BT 7 Claims


(LF−LR)
(RF−RR)
CARRIER SUPPRESSED AM SIGNAL AT 19KHz (FREQUENCY OF A PILOT SIGNAL)
(RF+RR)
(LF+LR)
30 9K 10K 19K 28K FREQUENCY Hz
A CARRIER SUPPRESSED AM SIGNAL AT 38KHz (DOUBLED FREQUENCY OF A PILOT SIGNAL)
FM MODULATION OF ±10KHz AT 85.5KHz
FM MOD
MAIN CHANNEL
FIRST SUBCHANNEL
SECOND SUBCHANNEL
30 8K 15K 23K 38K 55K 57.5K 85.5K 113.5K
FREQUENCY Hz

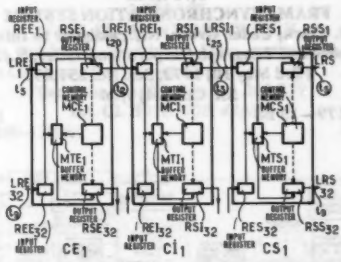
A broadcasting system wherein a left front, a right front, a left rear, and a right rear signal are transmitted on a single radio frequency channel with no significant increase in bandwidth. It should be compatible, that is, it should give satisfactory monophonic and two channel stereophonic reception on receivers presently in use by the public.

3,754,100

MULTI-STAGE TIME CONNECTION NETWORK ARRANGEMENT ADAPTED TO BE USED MORE PARTICULARLY IN TELEPHONE SWITCHING

Jean-Baptiste Jacob, Saint-Quay Perros, France, assignor to C.I.T.-Compagnie Industrielle Des Telecommunications, Paris and Societe Lannionnaise D'Electronique, Route de Perros-Quirec, Lannion, France

Filed , Ser. No. 39,786
Claims priority, application France, May 22, 1969, 6916790
Int. Cl. H04j 3/04
U.S. Cl. 179—15 AQ 6 Claims



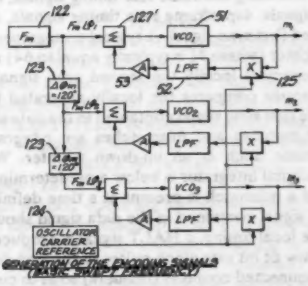
A time connection network comprises a structure consisting of several stages comprising at least an input stage, an intermediate stage and an output stage, connections existing between the input stage and the intermediate stage, and between the intermediate stage and the output stage, each stage being formed by a certain number of time switches each comprising a certain number of incoming lines and a certain number of outgoing lines, each incoming or outgoing line comprising several time channels and each time channel comprising several binary elements.

3,754,101

FREQUENCY RATE COMMUNICATION SYSTEM

John I. Daspit, West Los Angeles; Robert W. Jackman, San Diego, and Charles L. Weber, Los Angeles, both of Calif., assignors to Universal Signal Corporation, Cucamonga, Calif.

Filed July 2, 1971, Ser. No. 159,193
Int. Cl. H04j 1/06
U.S. Cl. 179—15 FS 29 Claims



A communication system for transmitting a plurality of analog or digital information signals to a receiver with an improvement in band width utilization over conventional

systems. A system with a plurality of swept frequency encoding signals, each frequency modulated at the same rate but with different phase, and in the preferred embodiment, means for amplitude modulating each encoding signal with a double sideband, suppressed carrier signal which may comprise two information signals, with the modulator outputs summed to provide a combined signal for further processing incorporating additional information signals and/or for transmission to a receiver. A system utilizing three such modulation arrangements for eighteen information signals and three combined signals, with the three combined signals used for amplitude modulating another set of three swept frequency encoding signals to provide a further combined signal for transmission to a receiver. A receiver with a decoding system providing the reverse of the encoding system. A receiver wherein one or more of the transmitted information signals can be selected for reproduction.

3,754,102

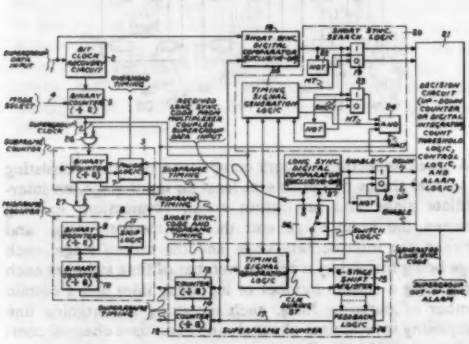
FRAME SYNCHRONIZATION SYSTEM

James M. Clark, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed May 10, 1972, Ser. No. 251,895

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **10 Claims**



Frame synchronization for a binary data signal including a superframe having M midframes, each of the M midframes, including m subframes is accomplished by providing within the data signal a first sync signal having a first predetermined pattern disposed in each of the M midframes and a second sync signal having a second predetermined pattern different than the first pattern composed of M bits, each of the M bits being disposed in a different one of the M midframes, wherein M and *m* are integers greater than 1, such as M = 64 and m = 15. A data bit rate clock is extracted from the data signal and applied to a cascade connection of digital dividers to provide local timing, including subframe rate timing signals, midframe rate timing signals, superframe rate timing signals, and a locally generated first sync signal. A typical arrangement of a six stage shift register (where M is typically equal to 64) and feedback logic generates locally the second sync signal. A first digital comparator compares the locally generated first sync signal with the first sync signal contained in the data signal and the resulting matches and mismatches are integrated in a digital integrator, such as an up-down counter. When the count of the digital integrator is below a predetermined count threshold and a mismatch is present at a time defining when the first sync signal contained in the data signal should occur relative to the local timing, a HALT signal is produced which inhibits the flow of bit rate clock pulses to the first counter of the cascade connected counters (dividers) so as to control the phase of the timing signals with respect to the data signal to establish and maintain synchronization of the local timing to the midframes of the data signal. The received second sync signal and the locally generated second sync signal are compared a bit at a time in a digital comparator, which produce as the result of bit errors in the received second sync signal or as the result of incorrect phase of the locally generated second sync signal matches and mismatches which also are applied to the digital integrating up-down counter. When the count of the digital integrator is less than a second count threshold different than the first threshold, switching logic connects the received second sync signal to the shift register to provide therein error free bits of a portion of the received second sync signal which through the cooperation of the feedback logic generates an error free locally generated second sync signal so that in cooperation with synchronization of the midframe, the superframe is synchronized.

3,754,103

DEVICE FOR RANDOMLY SCANNING TRUNKS IN TIME DIVISION SWITCHING SYSTEMS

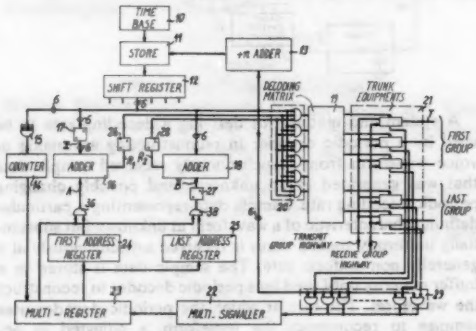
Maurice J. Revel, rue de Lanneg-Braz, Perros-Guirec, France

Filed May 16, 1972, Ser. No. 253,885

Claims priority, application France, May 18, 1971, 7117923

Int. Cl. H04j *3/00*

U.S. Cl. 179—18 FF **2 Claims**



Device for randomly scanning trunks in time division switching systems. The trunks form a group which is divided into trunk beams or groups serving particular destinations and they are given successive addresses throughout the group. Each beam is defined by the address of its first trunk and the address of its last trunk. The scanning device cyclically supplies trunk addresses derived from one another by an address jump or increment. A trunk finder is controlled by the scanning device when the supplied address is comprised in the interval between the first and last addresses of a selected beam and remains inoperative when the supplied address is outside this interval. The number forming the address increment is a prime number with respect to the total number of trunks.

3,754,104

TRIMARAN AIR BEARING MAGNETIC TRANSDUCING ASSEMBLY

Ronald Newman Piper, London, and Kenneth Stammers, Woking, both of England, assignors to International Computers Limited, London, England

Filed July 22, 1971, Ser. No. 165,023

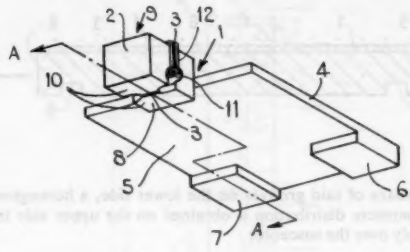
Claims priority, application Great Britain, Oct. 1, 1970, 46,845/70

Int. Cl. G11b *5/60*

U.S. Cl. 179—100.2 P **3 Claims**

A magnetic transducing head is disclosed which is supported relative to a record medium by three pads spaced apart from one another in triangular formation. Two pieces of ferromagnetic material are bonded together by a non-magnetic

material to produce an assembly having a transducing gap, the assembly being shaped in the region of the transducing gap to



produce a magnetic head which also serves as one support pad. Two pads integrally formed on the ferromagnetic assembly provide the other supports.

3,754,105

CIRCUIT ARRANGEMENT FOR ECHO SUPPRESSION IN A VOICE CIRCUIT ON A FOUR-WIRE TRANSMISSION SYSTEM UPON TRANSFER TO A TWO-WIRE TRANSMISSION LINE

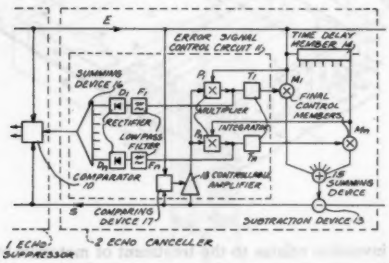
Werner Poschenrieder, Schuckertstrasse 14, 8000 Munich 25, and Hermann Bendel, Ziehrerstrasse 10, 8000 Munich 71, both of Germany

Continuation-in-part of Ser. No. 884,877, Dec. 15, 1969. This application June 7, 1972, Ser. No. 225,050

Claims priority, application Germany, Dec. 20, 1968, P 18 16 153.0

Int. Cl. H04b *3/20*

U.S. Cl. 179—170.2 **4 Claims**



An echo suppression arrangement for a four-wire to two-wire transfer in a communication system employs a first echo suppressor which is normally inactive and which is rendered active in response to a first comparator of the first echo suppressor and a second comparator of an echo canceller when echo simulation of the canceller is inadequate to compensate for the instant echo.

3,754,106

PANEL DISPLAY SWITCH

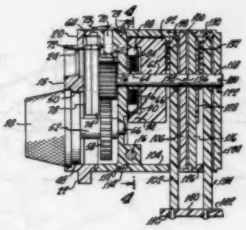
Wayne A. MacDonald, 11803 Windhill Way, Santa Ana, Calif.

Filed Apr. 3, 1972, Ser. No. 240,437

Int. Cl. H01h *19/58*

U.S. Cl. 200—14 **17 Claims**

A sealed switch assembly is disclosed which includes gear reduction between rotary switching elements and a front mounted rotary knob and which allows mounting of the completely assembled switch, as a unit, in a display panel. The switch is modular in construction and permits the addition of a selective plurality of sealed switching elements to the rear of the main switch module so that a frontal display of switch posi-



tion is not distorted when switches with a variety of different switch element combinations are ganged for an in-line display.

3,754,107

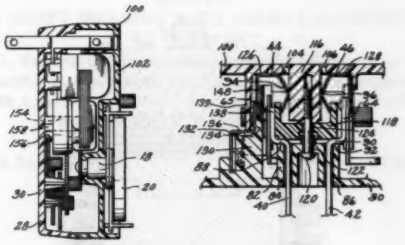
WALL PLUG-IN TIME SWITCH

Charles A. Balchunas, Hopkinton, Mass., assignor to General Electric Company, Bridgeport, Conn.

Filed June 8, 1972, Ser. No. 260,759

Int. Cl. H01h *7/08, 43/10*

U.S. Cl. 200—38 A **8 Claims**



A wall plug-in time switch wherein a pair of shouldered wall prongs are uniquely mounted in a housing of the time switch for connecting the time switch to a conventional wall mounted outlet box. The construction includes shoulders on the wall prongs which are sandwiched between bosses which are formed on a rear casing and a front cover of the time switch housing. Electrical outlet receptacle spring contacts are placed directly over the wall prongs, and terminals for an electric motor are also located in the vicinity of the wall prongs so that the wall prongs, receptacle spring contacts, and electric motor are reliably connected to each other and positioned within the housing with the use of relatively few parts.

3,754,108

CIRCUIT BREAKER TOGGLE MECHANISM WITH SPRING-BIASED LATCH PLATE

Maurice Rene Marot, Edenvale, and Norman William Povey, Germiston, both of South Africa, assignors to Electrical Protection Co. (PTY) Ltd., Benoni, Transvaal, South Africa

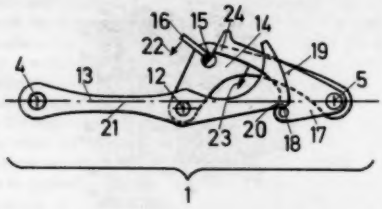
Filed Sept. 10, 1971, Ser. No. 179,306

Int. Cl. H01h *3/46, 71/12*

U.S. Cl. 200—153 G **5 Claims**

A circuit breaker operating mechanism which may be set to constrain movable contacts to close with stationary contacts, but which is adapted to collapse resulting in the contacts opening. The operating mechanism comprises a toggle-link and a latch-frame articulated with one another so as to permit collapsing of the operating mechanism and a latch which may be disengaged to permit the collapsing. The invention provides in addition a latch-plate in the operating mechanism

which by virtue of a lever advantage reduces the energy requirements to disengage the latch and so permits a more



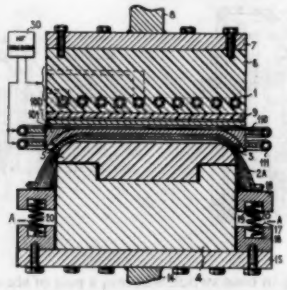
sensitive operating mechanism. The components are shaped to minimize space taken by the mechanism in its collapsed state.

3,754,109

BRAZING PRESS PARTICULARLY FOR BRAZING A PRESSING INCLUDING CURVED PORTIONS TO A MATCHING PLATE

Jean Moulin, and Bernard Dallet, Massy, France, assignors to Societe De Traitements Electrolytiques Et Electrothermiques (Stel)

Filed Aug. 16, 1972, Ser. No. 281,763
Int. Cl. H05b 5/00
U.S. Cl. 219—9.5 **14 Claims**



Brazing press for joining pressings having a bottom and a sidewall and curved portions connecting the former two, such as bottoms of shaped cooking utensils, pots or pans, to a matching heat diffuser plate of a heat conducting metal covering at least part of the curved portions. Such a press includes : a main inductor ; a ferromagnetic susceptor device interposed between the inductor and the diffuser plate for heating said latter and including a flat central portion and an annular peripheral portion matching the outer edge of the diffuser plate ; a supplementary inductor for heating the annular susceptor portion and means for exerting pressure on the edge of the sidewall to make the curved portions bulge so as to flatten them against the matching portions of the diffuser plate during the brazing operation.

3,754,110

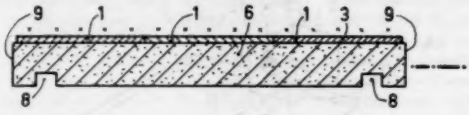
SUSCEPTOR HAVING GROOVES

Cornelius Johannes Adrianus van Dongen; Jacobus Michael Wilhelmus Hofsteede, and Johannes Adrianus Terburg, all of Nijmegen, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,888
Claims priority, application Netherlands, Mar. 6, 1971, 7,103,019
Int. Cl. H05b 5/04
U.S. Cl. 219—10.49 **6 Claims**

The invention relates to a susceptor for heating bodies by means of high frequency energy.

The lower side of the susceptor comprises a profile which consists of longitudinal grooves present near the side surfaces.



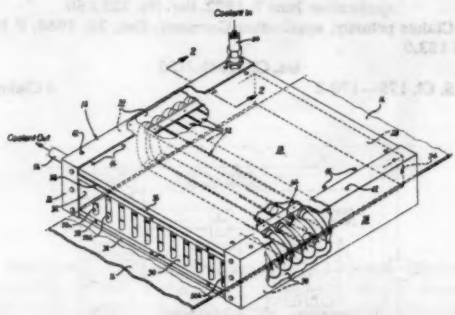
By means of said grooves on the lower side, a homogeneous temperature distribution is obtained on the upper side transversely over the susceptor.

3,754,111

ACCESS TUNNEL AND ATTENUATOR FOR MICROWAVE OVENS

Peter D. Jurgensen, San Carlos, Calif., assignor to Gerling Moore, Inc., Palo Alto, Calif.

Filed Apr. 5, 1972, Ser. No. 241,238
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **9 Claims**



This invention relates to the treatment of materials by the application of microwave electromagnetic fields, and more particularly, to the development of a microwave absorbent tunnel which permits continuous free access into a microwave oven while limiting the escape of microwave energy therefrom.

3,754,112

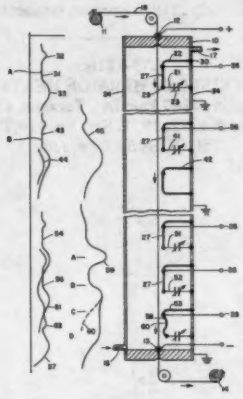
LOCALIZED HEATING FILAMENTS BY INDUCED CURRENTS

Harold E. DeBolt, Andover, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed June 14, 1972, Ser. No. 262,749
Int. Cl. H05b 9/02
U.S. Cl. 219—10.61 **12 Claims**

A method and apparatus is disclosed for using a plurality of spaced sequential induction circuits for inducing a predetermined current distribution pattern in a localized segment of a filament. The induced current pattern is controlled by com-

bining the effects of electro-magnetic induction, and standing wave patterns on the filamentary conductor together with the



transmission attenuation along the filamentary conductor. Additionally, the effect of the configuration of an induction circuit on induced current is covered.

3,754,113

METHOD OF ELECTRICALLY WELDING A CAPACITOR ELECTRODE TO THE CAPACITOR HOUSING

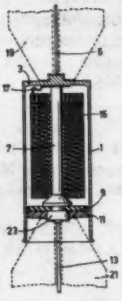
Roelof Dirk Bugel, Hattem, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 25, 1972, Ser. No. 247,374

Claims priority, application Netherlands, May 8, 1971, 7106347

Int. Cl. B23k *11/02*

U.S. Cl. 219—107 4 Claims



A method of electrically connecting an electrode of a capacitor roll which is supported by a metal pin to the bottom of a capacitor housing. To this end, a metal strip which is connected to the electrode is clamped between the metal pin and the bottom, after which an electric current is fed through the pin, the strip and the bottom.

3,754,114

ROTATABLE WELDING GUN

Jean-Pierre Peyrot, 1, avenue de la Division du General Leclerc, Villejuif, France

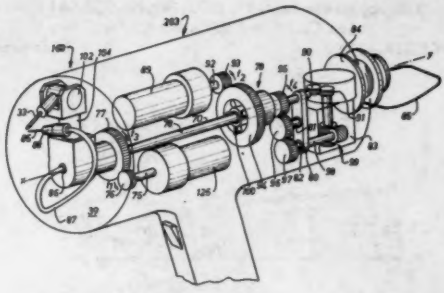
Filed Jan. 28, 1972, Ser. No. 221,497

Claims priority, application France, Apr. 14, 1971, 7113182

Int. Cl. B23k *9/12*

U.S. Cl. 219—125 R 12 Claims

A rotatable welding gun with an axial expansion means for centering radially a mandrel inside a tube to be welded, a reel for wire of welding metal rigidly fixed to the torch and the mandrel, permitting the weld in front of the torch to be supplied with welding metal during the rotation of the rotatable members.



3,754,115

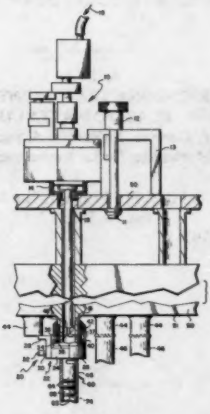
TUBE SHEET WELDING WITH INERT GAS PRESSURE AT THE JOINT

John G. Roberts, Thousand Oaks; Jack Weber, San Jose, and Secondino P. Margherio, Van Nuys, all of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 20, 1972, Ser. No. 236,300

Int. Cl. B23k *9/12*

U.S. Cl. 219—125 R 7 Claims



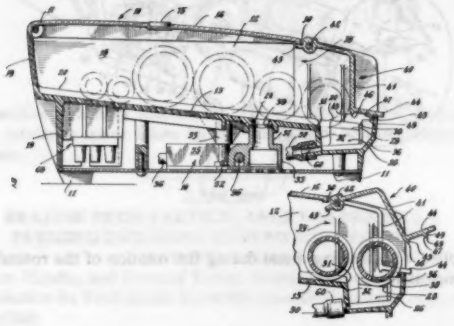
A method and apparatus is disclosed to horizontally butt fusion weld a tube to a tube sheet. A chill bar surrounds the butted joint forming a chamber around the joint to contain an inert gas under pressure. An orbital type welder is inserted inside the tube adjacent the butted joint and the interior atmosphere surrounding the electrode is pressurized with a second inert gas at a pressure higher than the inert gas in the chamber surrounding the exterior of the butted joint to prevent the weld puddle from falling by gravity into the inside of the horizontally disposed tube and tube sheet during the welding operation.

3,754,116

HAIR ROLLER APPLIANCE

Seigfried Godel, Norwalk, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.

Continuation of Ser. No. 174,954, May 28, 1971, abandoned.
This application Mar. 15, 1972, Ser. No. 235,034
Int. Cl. H05b 3/02; A45d 4/10
U.S. Cl. 219—222 10 Claims



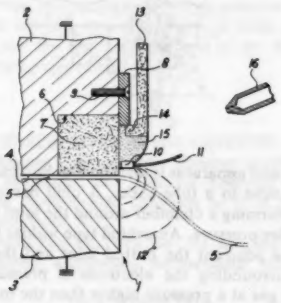
A portable appliance which includes a compartment for storing a plurality of hair rollers and an electrically energizable vapor generator cooperatively associated with the compartment to supply the compartment with hot vapor for heating and moistening the hair rollers. The floor of the compartment is inclined to cause the rollers to move, under the influence of gravity, through the compartment's access opening to a platform from which the rollers may be successively removed. A well is located in the floor of the compartment beneath the level of the opening in the floor through which vapor from the vapor generator passes into the compartment. The condensate thus tends to flow to the well rather than enter the inlet opening. In addition, the structure which is provided for opening and closing the access opening includes apparatus for causing condensate to flow to the well, rather than exit the appliance.

3,754,117

DEVICE FOR CORONA TREATMENT OF A LAYER OF PLASTIC MATERIAL

Jacques Walter, Geneve, Switzerland, assignor to Agence Nationale De Valorisation De La Recherche Anvar, Neuilly-sur-Seine, France

Filed Dec. 8, 1971, Ser. No. 205,903
Int. Cl. H05b 7/18
U.S. Cl. 219—383 5 Claims



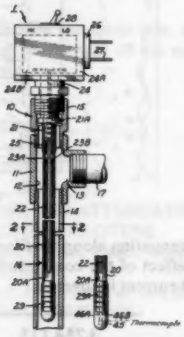
A corona effect is produced across the layer of material to be treated by means of an intense electric field set up between two electrically insulated electrodes separated by a very narrow air-gap consisting of a slit which is formed at the extremity of an extruder head and through which the material is delivered continuously at its maximum temperature.

3,754,118

FLEXIBLE IMMERSION HEATER

Aylwin Reed Booker, 4887 Palo Dr., Tarzana, Calif.

Filed Feb. 12, 1971, Ser. No. 114,776
Int. Cl. H05b 3/54, 1/02
U.S. Cl. 219—523 2 Claims



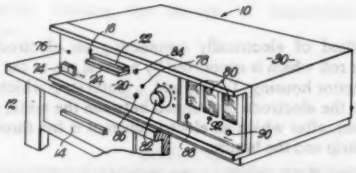
A flexible immersion heater assembly which permits fabrication of any desired length heater in the field includes a fluid impermeable flexible tube of non-metallic resilient material containing a section of flexible insulated electrical resistance wire. One end of the tube is telescoped over a frustoconically ribbed nipple on a hose fitting. The other end of the tube is suitably closed by a ribbed plug or a bonded pinch seal. Electrical leads to the resistance wire extend through the hose fitting and sealant means are provided for sealing the leads relative to the fitting. A thermostatic switch or a thermocouple are provided for controlling the heater in response to temperature changes. The heater assembly is adapted to be inserted in pipes, conduits and tanks.

3,754,119

LUNCH TICKET TABULATING MECHANISM

Edward E. Scott, Emporia, and Maurice David Sullivan, Cheney, both of Kans., assignors to Edward E. Scott, Emporia, Kans.

Filed Jan. 7, 1972, Ser. No. 216,072
Int. Cl. G06k 15/00, 19/00
U.S. Cl. 235—61.6 R 20 Claims

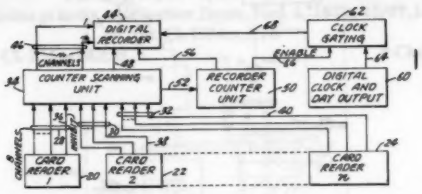


A tabulating and cancelling machine reads information from a data card inserted into the machine, stores the information for periodic display, and severs one credit portion from the card to cancel such portion each time the card is inserted into the machine, until all of the credit portions of the card have been severed therefrom. Data stripes on the card present a code representation of a specific factual situation, and each stripe is printed on all of the credit portions of the card such that, by placing an identification number of the card holder on each credit portion, the severed credit portions may be retained and used for audit purposes.

3,754,120
APERTURED CARD READER AND DIGITAL DATA COLLECTION SYSTEM

James R. Fitzgerald, New Hope, and Ronald G. Beschem, Mound, both of Minn., assignors to Incremental Systems, Inc., Minneapolis, Minn.

Filed Nov. 3, 1970, Ser. No. 86,473
Int. Cl. G06k 7/10
U.S. Cl. 235—61.11 E 9 Claims



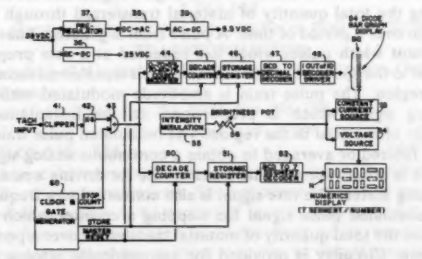
An apertured card reader adapted for converting information stored in an information bearing portion of an apertured card into digital signals as the apertured card is manually transported within the reader is shown. In one embodiment, the apertured card reading apparatus includes an input sensing means which is responsive to the apertured card being selectively inserted along a path a predetermined distance within the reader for starting the reading means which converts the stored information into a digital signal having characteristics determined by the rate at which the information bearing portion of the card is manually transported past the reading means and for disabling the reading means when the apertured card has been manually transported therepast.

A digital data collection system capable of converting information stored on apertured cards into digital signals representing the stored information wherein the system includes a counter scanning unit, a digital recorder, a recorder counter, a digital clock and clock gating means for recording on the strip member digital data representing information stored on at least one of said apertured cards read by a card reader and information representing the time and data said stored information was recorded on said strip member also shown.

3,754,121
SOLID STATE INSTRUMENT SYSTEM FOR DIGITAL COUNTING AND CONTINUOUSLY INDICATING COUNT RESULTS

Dennis G. Delay, Oxnard, Calif.; Sherman R. Parsons, Newark Valley, and Robert A. Steriacci, Endicott, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 28, 1972, Ser. No. 276,016
Int. Cl. G01p 3/12
U.S. Cl. 235—92 EA 9 Claims

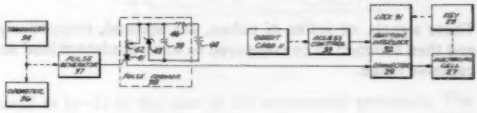


A digital solid state engine RPM sensing and indicating system for multi-engine aircraft, the RPM indications made simultaneously in the form of side-by-side bar graphs and side-by-side numeric displays for each engine showing RPM as a percentage of rated RPM, the displays being formed by light-emitting diodes and the system arranged such that the bar graphs indicate changes at each 5 percent of noted RPM below 70 percent and at 1 percent above 70 percent. Special current limiting and cooling features are provided to handle the current requirements of the diodes and power supply.

3,754,122
MILEAGE RECORDING

Nicholas Dinapoli; Donald Friedman; Robin P. Nicholls; Howard A. Wilcox, all of Santa Barbara, and Charles E. Wood, Porterville, all of Calif., assignors to Minicars, Inc., Goleta, Calif.

Division of Ser. No. 44,055, June 8, 1970, Pat. No. 3,665,397.
This application Jan. 24, 1972, Ser. No. 220,384
Int. Cl. G01c 22/02
U.S. Cl. 235—92 DN 3 Claims



An automatic automobile rental system having a plurality of remote rental stations and a central data processing station for system control and customer billing is described. A system user employs a credit card that is automatically read at a rental station to identify the user, and this information is checked at the central station to verify that the card holder is entitled to receive an automobile. The same card identifies the holder when the automobile is returned to the same or a different rental station. An ignition key and machine-readable car identification and mileage module are interconnected for reading and dispensing at a rental station and for use in operating an automobile. Mileage or other measure of usage of the rented automobile is recorded in an electrolytic cell as a state of charge proportional to mileage. The cell is transferred to the automobile for mileage recording and to the rental station for discharge and mileage reading. Standard pulses of charge in a number proportional to milegage are used to charge the electrolytic cell. Data read from the electrolytic cell, from the user card, and from the automobile identification are transmitted to the central data processing unit over conventional telephone lines.

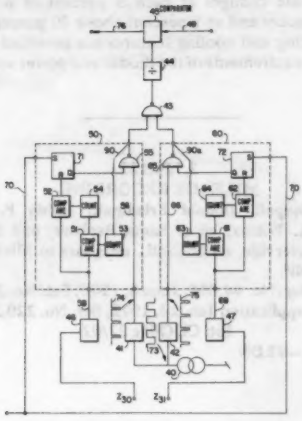
3,754,123
APPARATUS FOR ELECTRONICALLY SQUARING AND SUMMING PROJECTIONS OF A VECTOR FOR INSPECTING ARTICLES ON A CONVEYOR

Rene Keller, Dietikon, Switzerland, assignor to Emhart Corporation S.A., Zurich, Switzerland

Filed Feb. 28, 1972, Ser. No. 229,868
Int. Cl. G06g 7/22; G06m 7/00
U.S. Cl. 235—151.3 3 Claims

Two mutually perpendicular light beam patterns are directed across a continuously moving conveyor toward an array of light sensitive devices arranged in pairs for inspecting the silhouette of articles on the conveyor. The leaner inspection circuitry includes a pulse generating and counting means

capable of providing two signals indicative of the degree of lean of an article in two mutually perpendicular directions.



These signals, or series of pulses, are squared, respectively, and then summed to be compared to some predetermined acceptable range.

3,754,124

APPARATUS FOR POSITIONAL CONTROL

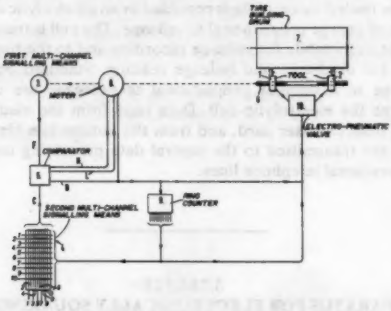
Robert L. Dressler, Birmingham, England, assignor to The Dunlop Company Limited, London, England

Continuation of Ser. No. 804,821, March 6, 1969, abandoned. This application Dec. 29, 1971, Ser. No. 213,754

Claims priority, application Great Britain, Mar. 9, 1968, 11,607/68

Int. Cl. G05b *19/34*; B29h *17/18*

U.S. Cl. 235—151.11 **11 Claims**



Positional control apparatus for controlling a tool, especially a spinning tool for consolidating tyre building components on a drum, comprising a multichannel digitizer for indicating tool position, a multichannel device adapted to be preset to provide a signal on any one of its output channels, the number of channels of the digitizer equally the number of channels of the device, and a comparator device for comparing the signals from the digitizer and multichannel device to control the tool appropriately, of which the following is a specification.

3,754,125

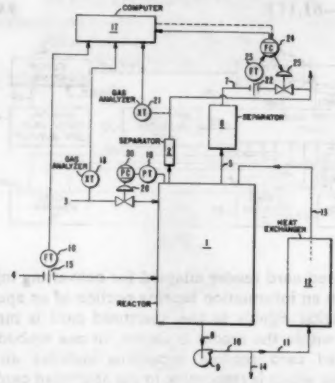
VENT GAS CONTROL SYSTEM

Mark B. Rothstein, Pennsville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 6, 1971, Ser. No. 104,218

Int. Cl. C07c *85/10*

U.S. Cl. 235—151.12 **6 Claims**



A process and apparatus for reacting a gas and a liquid by selectively adjusting the vent gas rate in relation to the liquid feed rate, impurities in the gas feed and impurities in the vent gas.

3,754,126

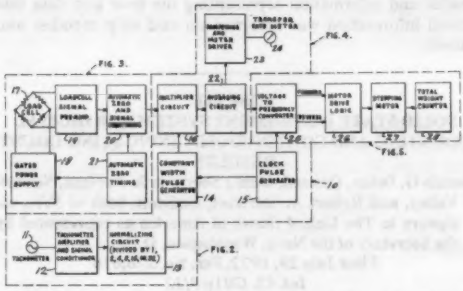
INTEGRATING CONVEYOR SCALE

Roger B. Williams, Jr., Sylvania, Ohio, assignor to Reliance Electric Company, Toledo, Ohio

Filed Jan. 6, 1972, Ser. No. 215,870

Int. Cl. G01g *11/14*; G06g *7/18*

U.S. Cl. 235—151.33 **17 Claims**



An improved method and apparatus for measuring the rate at which material is transferred through a region and for measuring the total quantity of material transferred through the region over a period of time. A pulse train is generated having constant width pulses which are repeated at a rate proportional to the speed at which the material is transferred through the region. The pulse train is amplitude modulated with an analog signal which is proportional to the instantaneous weight of material in the region. The modulated pulse train is then filtered or averaged to obtain a continuous analog signal which is proportional to the transfer rate for driving a rate indicating meter. The rate signal is also converted to a frequency modulated pulse signal for stepping a counter which indicates the total quantity of material transferred over a period of time. Circuitry is provided for automatically zeroing the analog weight signal and for inhibiting measurements of less than a predetermined percentage of the maximum capacity of the apparatus.

3,754,127

EMERGENCY SUPERVISING EQUIPMENT

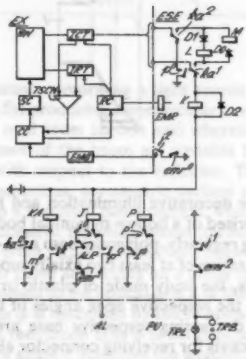
Tadakazu Uno, Tokyo; Toichi Katsoka, Urawa; Noboru Suzuki; Hisatomo Munetaka, both of Yokohama; Shoichi Kutsukake, Kawasaki, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation; Oki Electric Industry Co. Ltd.; Nippon Electric Co., Ltd.; Hitachi Limited and Fujitsu Limited

Filed Nov. 4, 1971, Ser. No. 195,719

Claims priority, application Japan, Nov. 6, 1970, 45/97,141

Int. Cl. H04m *3/28*

U.S. Cl. 235—153 AC 9 Claims



Emergency supervising equipment for supervising the overall operation of the processing program operation of a stored program controlled switching system. The equipment periodically applies a simulated starting signal to an incoming trunk circuit of the switching system. The emergency supervising equipment comprises means for detecting a responsive reversal signal sent back from the incoming trunk circuit when the trunk circuit is connected to an incoming register trunk circuit. The equipment determines that a normal condition prevails when the reversal signal is received within a certain period and it determines that an emergency condition exists when the reversal signal is not received within a certain predetermined period. The equipment may be so constructed as to determine the emergency condition only after detecting a certain predetermined number of successive faulty conditions or it may be so constructed to determine the emergency condition only when a predetermined number of simultaneous faulty conditions are detected using a plurality of the supervising equipments.

3,754,128

HIGH SPEED SIGNAL PROCESSOR FOR VECTOR TRANSFORMATION

Michael J. G. Corinthios, 35 Charles St. W., Toronto, Ontario, Canada

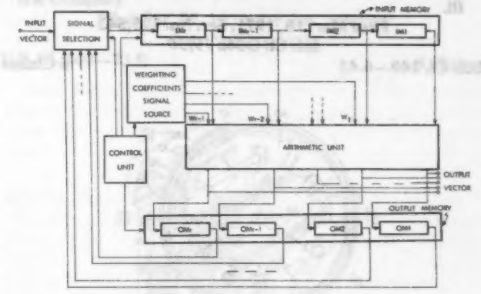
Filed Aug. 31, 1971, Ser. No. 176,644

Int. Cl. G06f *7/38, 15/34*

U.S. Cl. 235—156 14 Claims

A signal processor for real-time signal analysis with three different implementations. The processor accepts as an input a vector which is to be multiplied by a transformation matrix. The first implementation is in the form of an asymmetric processor comprising an input memory, an output memory, an arithmetic unit, a weighting coefficients signal source, signal selection means, and a control unit. Each of the input and output memories is divided into r queues where r is the value of the radix of factorization of the transformation matrix. The weighting coefficients signal source feeds $(r-1)$ predetermined coefficients to the arithmetic unit. The values of the weighting coefficients, obtained through the factorization of the said transformation matrix, are of uniformly ascending order. The processor is suited for implementing either post permutation or ordered input ordered output algorithms. The second implementation is in the form of a symmetric processor having r parallel channels in which arithmetic is simultaneously performed. This processor is faster than a corresponding asymmetric processor due to the fact that the weighting coefficients are simultaneously fed to the arithmetic unit in the form of r inputs, or channels, rather than $(r-1)$. Arithmetic is thus performed with a level of parallelism that is equal to r, as compared to $(r-1)$ in the case of the asymmetric processor. The third implementation is in the form of a processor comprising a first memory, a second memory, an arithmetic unit, a weighting coefficients signal source, first and second signal selection means, and a control unit. The first and second memories are each divided into r^2 queues. In this processor the arithmetic unit is not fully wired-in but is utilized in 100 percent of the time of processing.

In any of the said three implementations real time processing is achieved by accumulating new data in an input buffer memory while the older record is being processed.



3,754,129

AUTOMATIC CONTROL FOR MINING PIT PROPS

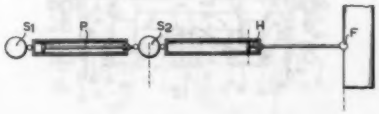
Helmut Schmidt, Essen-Haarzopf, Germany, assignor to Bergwerksverband GmbH, Essen-Kray, Germany

Filed Aug. 5, 1970, Ser. No. 61,345

Claims priority, application Germany, Aug. 6, 1969, P 19 39 990.7

Int. Cl. G06m *1/12*

U.S. Cl. 235—201 3 Claims



A control for the alignment and if need be, pivoting of a prop or post in mining, whose theoretical course in the plane of the work is indicated by a straight line or a curve and whose ideal or actual course results from positive or negative deviations, which are analyzed at several measuring points located along the prop or post by means of digital forward and backward (or positive and negative) logic pulses. Each measuring point corresponds to an evaluation unit having a storage member. Each unit converts the stored signals into control signals for spatially differentiated treatment of a mine face, whereby the storage members of the evaluation units are connected with one another by a storage interrogation and return conduit. To each measuring point are assigned two

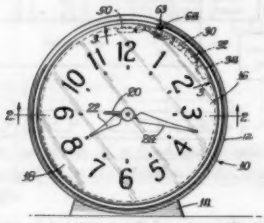
measuring devices, of which at least one comprises a thrust-piston drive serving for the advance of the recovery device. The piston path or stroke of the thrust piston drive is divided into partial lengths, whose through-passage through the piston in each case releases one of the binary rearward or forward pulses.

3,754,130

ILLUMINATABLE CRYSTAL ASSEMBLY

Wilfred S. Stone, Wayne, and Robert L. Walker, Saint Charles, both of Ill., assignors to Wilfred S. Stone, Wayne, Ill.

Filed Mar. 18, 1971, Ser. No. 125,543
Int. Cl. G04b *19/30*
U.S. Cl. 240—6.43 6 Claims



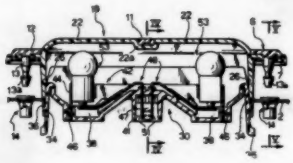
A crystal assembly carrying a lamp, a battery and a switch; the crystal assembly being placeable over a dial and by actuating the switch the lamp is lighted to illuminate the dial.

3,754,131

LAMP FOR ILLUMINATING REAR LICENSE PLATES OF MOTOR VEHICLES

Salvatore DiSalvo, and Francesco Guglielmino, both of Turin, Italy, assignors to FIAT Societa per Azioni, Turin, Italy

Filed Jan. 6, 1972, Ser. No. 215,718
Claims priority, application Italy, Jan. 14, 1971, 52826 A/71
Int. Cl. B60g *1/26*
U.S. Cl. 240—7.1 G 4 Claims



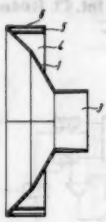
A lamp for illuminating the rear license plate of a vehicle has a transparent plastics casing over which a plastics cover fits, two protuberances of the casing fitting into two apertures in the cover to provide the desired illumination. The cover has fixing pins which snap-engage in slidable blocks trapped behind the rear bumper of the vehicle to locate the lamp in a seat in the bumper. Respective metal contacts have integral blade connectors which project through the bottom of a plastics lampholder with which the casing is snap-engaged, to make contact with two lamp bulbs in the casing.

3,754,132

REFLECTOR FOR DECORATIVE ILLUMINATION AND LUMINOUS ADVERTISEMENT

Abram Mamrud, Kurfurstendamm 50, and Gerhard Priebe, Waitzstrasse 11, both of 1 Berlin 15, Germany

Filed Oct. 29, 1971, Ser. No. 193,930
Claims priority, application Germany, Nov. 2, 1970, G 70 41 565.5
Int. Cl. F21v *7/05*
U.S. Cl. 240—10 R 4 Claims



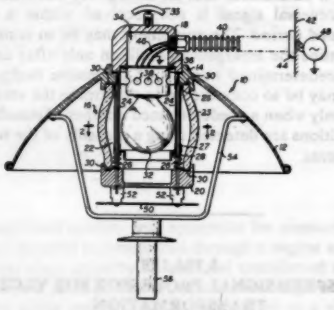
Reflector for decorative illumination and luminous advertisement comprised of a hollow pyramidal body with a central axis and having regularly, polygonal base area contour, further having configuration of at least two axially superimposed truncated pyramids, the body made of plastic or metal as deep-drawing body, the respective apex angles of the pyramids increasing with decreasing respective base area. A mounting flange with pockets for receiving connector elements, extends transverse to the base area, and from the outer periphery of the body at the largest base area of the pyramids.

3,754,133

LAMP FOR USE IN A HIGH PRESSURE ENVIRONMENT

Myron Youdin, Flushing, and Theobald Reich, New York, both of N.Y., assignors to New York University, New York, N.Y.

Filed Aug. 19, 1971, Ser. No. 173,122
Int. Cl. A61g *13/00*; F21v *29/00*
U.S. Cl. 240—11.2 E 5 Claims

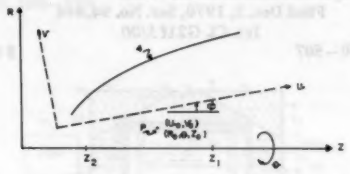


In a lamp for use in a chamber containing a high pressure environment preferably greater than one atmosphere wherein the lamp includes a light source and a substantially pressure tight explosion-proof housing, the light source being located within the housing interior and the housing exterior being capable of withstanding pressures greater than atmospheric pressure, means are provided which are cooperatively associated with the housing for maintaining the interior of the housing substantially at atmospheric pressure while the interior of the chamber exterior to the housing is at a higher pressure, the housing being substantially non-porous with respect to the chamber interior.

3,754,134
ASYMMETRIC BEAM SPOTLIGHT

Robert E. Levin, Hamilton, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed May 30, 1972, Ser. No. 257,938
Int. Cl. F21v 7/09
U.S. Cl. 240—41.37 7 Claims

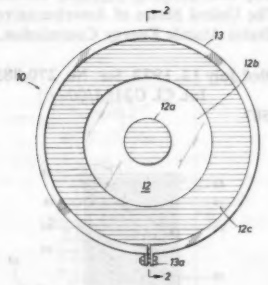


An optical system comprising a light source and an asymmetric reflector for producing a noncircular beam of light having a generally oval cross section and wherein the intensity and angular extent of the beam are variable by moving the source axially with respect to the reflector. The reflector is defined by a continuous, asymmetric surface generated by a curve $v = f(u)$ in a meridian plane thereof, which curve varies angularly in successive meridian planes through an angle ϕ about a moving point (R_o, θ, Z_o) fixed with respect to the curve in each meridian plane and falling on a circle concentric with and in a plane normal to the optical axis Z of the reflector. The angular variation ϕ is described by the relation $\phi = g(\theta)$ and conforms to the restriction that ϕ is continuous and periodic on $\theta = 2\pi$, where angle θ describes the angular position of the meridian plane about the optical axis of the reflector.

3,754,135
LIGHT TREATING MEANS

Clarence E. Hulbert, Jr., P.O. Box 265, West Columbia, Tex.

Filed Apr. 21, 1971, Ser. No. 136,799
Int. Cl. F21v 9/08
U.S. Cl. 240—46.59 15 Claims

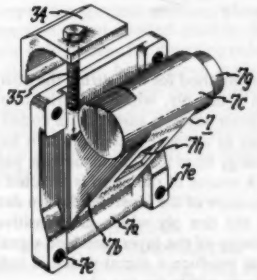


A central circle of blue, translucent light filtering material is surrounded by an annular circle of clear transparent material which in turn is surrounded by an annular area of blue translucent light filtering material to form a filtered zone plate through which artificially produced light is filtered and mixed to provide a more natural white light having reduced glare and improved color resolution and illumination. In a preferred form, the clear area functions as a light aperture and the central and annular translucent areas cooperate to provide a filtered light which mixes with the light passing through the aperture. The clear and translucent areas are provided by a flat, transparent plate which is removably secured to the light emitting face of a sealed beam lamp. The lamp includes a resistive incandescent filament for providing a light source, a parabolic reflector for collimating light directed through the plate and an opaque, reflective curved light shield positioned between the light source and the plate for preventing light produced by said light source from traveling through the plate without first being reflected from the reflector. The translucent areas are formed of a thin coating of an acrylic ester lacquer dyed with iron blue pigment. The filtered and unfiltered light combine to produce a white light surrounded by a blue field.

3,754,136
FLOODLIGHT HAVING T-SHAPED HINGE CONNECTION

Mitchell M. Osteen, Zirconia, N.C., assignor to General Electric Company

Filed Apr. 27, 1972, Ser. No. 247,957
Int. Cl. F21s 5/00
U.S. Cl. 240—73 R 8 Claims

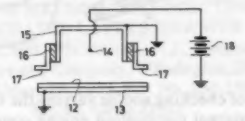


Floodlight has an optical housing hingedly attached to a separate ballast housing having a built-in slipfitter for mounting on a post top. The hinge connection includes a T-shaped support arm having a transverse tubular portion rotatable in a corresponding recess on the ballast housing. An adjustable clamp holds the tubular hinge portion in selected adjusted position for maintaining the optical housing at the desired angle relative to the supporting post.

3,754,137
CORONA DISCHARGE DEVICE

Nin-Ichi Kamogawa, and Minoru Okumura, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1971, Ser. No. 124,696
Int. Cl. G03g 15/00
U.S. Cl. 250—326 6 Claims



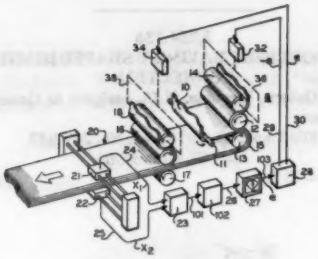
A corona discharge device for use in electrophotography and electrostatic printing apparatuses is provided having a corona discharge electrode, a shielding back plate with a corona discharge aperture and one or more conductive plates. Each of the conductive plates is insulated from the remainder of the apparatus and positioned adjacent to the aperture. A potential is impressed on each of these plates during corona discharge to prevent dust and other foreign particles from entering through the aperture and adhering to the electrode.

3,754,138

INNER LAYER POSITION MEASUREMENT

Harold A. Kurstedt, Jr., and Mason L. Thompson, Jr., both of Columbus, Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Oct. 7, 1971, Ser. No. 187,413
Int. Cl. G01t 1/16
U.S. Cl. 250—302 15 Claims



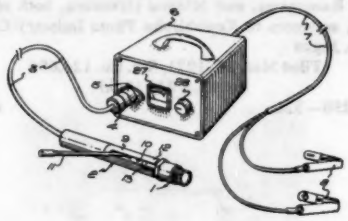
Apparatus and method for measuring the position of a layer disposed within a tire ply, which material contains metallic particles. The inner layer is metal or is coded by providing metallic particles as a tracer material which have a different fluorescence energy from that of the metallic particles present in the tire ply. A source of radiation is directed at the tire ply to cause fluorescence of the layer. Radiation detectors on opposite sides of the tire ply which are sensitive only to the fluorescence energy of the layer, produce signal outputs that are compared to produce a signal which is indicative of the position of the layer within the tire ply.

3,754,139

INTERNAL COMBUSTION ENGINES WITH INFRA-RED DETECTION

Joshua Swithenbank, Hathersage, near Sheffield; David Shaw Taylor, and Michael Stuart Bolton, both of Sheffield, all of England, assignors to Gunson's Colorplugs Limited

Filed May 22, 1972, Ser. No. 255,651
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 H 9 Claims



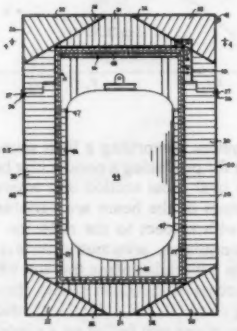
A method of checking and/or varying the fuel to air mixture ratio of an internal combustion engine comprises measuring the intensity of the infra-red emission from the flame during combustion in the combustion chamber by an infra-red photosensitive device and feeding the signal to an indicator, such as a meter, an audible device, or a "magic eye" device, and/or to automatic control means for effecting any adjustment that may be necessary of the fuel/air mixture ratio. Apparatus comprises a "Colourtune" spark plug provided with a tubular adaptor comprising an insulating sleeve with a longitudinal slot for the lead of the plug from one end fitting over the transparent core of the plug, and the other end of the sleeve being joined to one end of a tubular metal shield the other end of which houses a detector cell for infra-red emission mounted on an insulated plug eccentrically with respect to the insulating sleeve on the opposite side of the axis to the slot for the plug lead.

3,754,140

TRANSPORT CASK FOR RADIOACTIVE MATERIAL

Frederick P. Beierle, Prosser, Wash., assignor to Chem.-Nuclear Systems, Inc., Bellevue, Wash.

Filed Dec. 2, 1970, Ser. No. 94,444
Int. Cl. G21f 5/00
U.S. Cl. 250—507 5 Claims



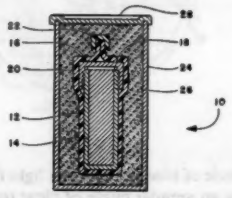
A cask assembly for the transport of radioactive material comprising a shielded cylindrical cask slidably received within a cask overpack. The assembly is supported on the bed of a truck within an encircling cradle. The overpack comprises inner and outer cylindrical shells filled by directionally oriented honeycomb material designed to withstand external forces without rupture of the protective cask or containment vessel.

3,754,141

SHIPPING AND STORAGE CONTAINER FOR HIGH POWER DENSITY RADIOACTIVE MATERIALS

Robert G. Leebl, Arvada, Colo.; Robert L. Sandvig, Rapid City, S. Dak., and Edward Vejvoda, Boulder, Colo., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 12, 1972, Ser. No. 270,885
Int. Cl. G21f 3/00
U.S. Cl. 250—507 3 Claims

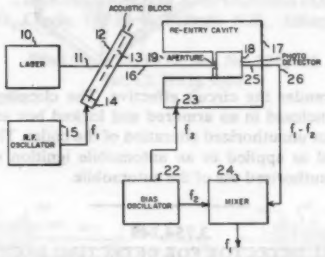


A shipping and storage container for radioactive material, particularly high thermal producing fissile material, which includes a cylindrical inner metal container for retaining the radioactive material, an alpha contamination barrier of polyvinyl chloride surrounding said inner container, a cylindrical outer metal container enclosing said inner container and barrier with inner surfaces spaced from the inner container walls and from said barrier, and finely divided heat absorbing and transferring or conducting magnesium oxide filling the space intermediate said barrier and the inner surfaces of the outer metal container.

3,754,142
HIGH FREQUENCY LAD LINE USING LOW FREQUENCY DETECTORS

Albert W. Angelbeck, Manchester, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1971, Ser. No. 119,696
Int. Cl. H04b 9/00
U.S. Cl. 250—199 5 Claims

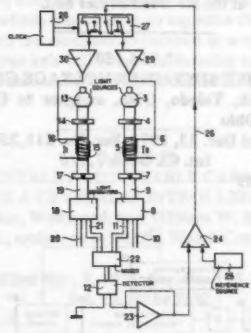


The invention disclosed herein provides an improved laser acoustic delay line having a low frequency detector in the line operating at a first frequency. This is accomplished by combining an acoustic block actuated at a first frequency and a photo detector receiver in the path of a laser beam with a second frequency to produce the first frequency by mixing.

3,754,143
MAGNETIC-OPTICAL GENERATOR

Gilbert Lesueur, Aix-les-Bains, France, assignor to Alsthom-Savoisienne, Saint-Ouen, France

Filed Sept. 23, 1971, Ser. No. 182,969
Claims priority, application France, Sept. 23, 1970, 7034465
Int. Cl. G01j 1/36
U.S. Cl. 250—204 1 Claim

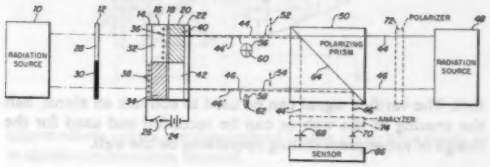


Magnetic-optical generator, transmitting light impulses along several channels, characterized by the fact that a portion of the flow transmitted in each channel is sent on to a photo-electric detector whose electric output signal is compared to a reference in order to give a signalwhich is in sequence switched by a control logic to the control of a magnetic field producing coil in each one of the channels taken in succession.

3,754,144
IMAGE CONVERTER CHANGING INFORMATION OF ONE FREQUENCY TO ANOTHER FREQUENCY

Paul J. Caruso, Bedford, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed July 16, 1971, Ser. No. 163,549
Int. Cl. H01l 17/00
U.S. Cl. 250—213 R 10 Claims

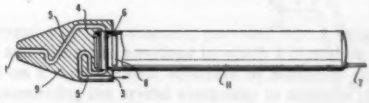


Apparatus is disclosed for reading out information present in the form of variations in intensity of an electric field, including an electro-optic birefringent medium, whose birefringence varies as a function of an applied electric field, associated with the electric field, means for directing polarized radiation through the electro-optic birefringent medium, means for reflecting the polarized radiation back through the electro-optic birefringent medium, and means for detecting the modulation representative of the information present in the electric field imposed upon the radiation by the birefringence of the electro-optic medium.

3,754,145
IN SITU FLUOROMETER

William Benjamin Leaf, Silver Spring, Md., assignor to Prototypes, Incorporated, Kensington, Md. and Zone Research Incorporated, Washington, D.C.

Division of Ser. No. 134,781, April 16, 1971, Pat. No. 3,649,833. This application Feb. 9, 1972, Ser. No. 224,713
Int. Cl. G01n 21/16, 21/26, 21/38
U.S. Cl. 250—218 1 Claim



Disclosed herein is a self-contained submersible fluorometer designed for the continuous in situ recording of concentrations of materials in an aqueous environment, said materials being stimulated to fluoresce when excited by light of proper wavelengths.

3,754,146
APPARATUS AND METHOD FOR DETECTING STREAKS IN COATED LAYERS ON A WEB

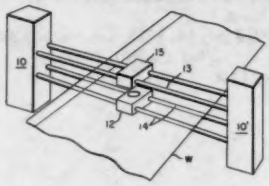
Allan Tit-Shing Chow, Piscataway, N.J., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 27, 1972, Ser. No. 238,199
Int. Cl. G01n 21/32
U.S. Cl. 250—219 DF 10 Claims

A detecting head and light source are synchronously traversed on opposite sides of a continuous moving web. Photoelectric detector elements are recessed in rectangular channels disposed symmetrically about rectangular coordinate axes, the principal axis of the rectangular channels is in the direction of web travel, and centered on the detecting head opposite the center of the synchronous traversing light source.

A streak defect in a coated layer on the web interferes with the transmitted light to the detecting elements resulting in an electrical characteristic signal across the detecting elements.

The characteristic signal is amplified, digitized and electronically processed for verification of the presence of a streak de-



fect. The verified signal can be used to activate an alarm, halt the coating of the web or can be recorded and used for the design of subsequent slitting operations on the web.

ERRATUM

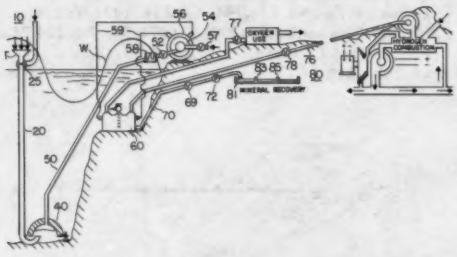
For Class 290—1 see:
Patent No. 3,754,151

3,754,147

METHOD AND SYSTEM FOR CONVERSION OF WATER AND DEVELOPMENT OF POWER

Bruce Jay Hancock, Mesa, Ariz.; Don E. Johnson, Irvine, Calif., and Zane W. Merkley, Mesa, Ariz., assignors to Aqualectra of Arizona, Mesa, Ariz.

Continuation of Ser. No. 803,384, Feb. 28, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,195
Int. Cl. F03b *13/10*
U.S. Cl. 290—53 **10 Claims**



Using the power from ocean waves, air is entrained by the Bernoulli principle and placed under compression. This compressed air is used to drive prime movers and to generate electricity. The generated electricity can be employed to desalt and separate sea water electrolytically into oxygen and hydrogen and the gases used to produce power and other useful products. The hydrogen which is highly fluid and of low weight can be transported inexpensively to a distance from the sea and then reconverted to water, combining it with atmospheric oxygen, producing substantial energy as well as water.

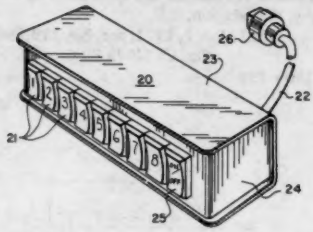
3,754,148

SECURITY SYSTEM FOR PREVENTING UNAUTHORIZED USE OF ELECTRIC CIRCUITS

Glenn R. Nye, Denver, Colo., assignor to Space Electronics, Inc., Englewood, Colo.

Filed July 24, 1972, Ser. No. 274,227
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 AT **12 Claims**

A coded security system for an electric circuit includes a bank of touch type switches and requires selection of a plurality of the switches in predetermined order to render the circuit effective together with an arrangement for bypassing the security system during servicing or adjustment or other authorized use of the circuits. The bypassing arrangement is coded to require the simultaneous operation of a plurality of the touch switches after the first coded switches have been ac-



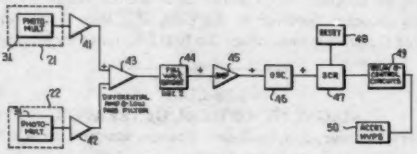
tuated to render the circuit effective. The circuitry for the system is enclosed in an armored and locked box to prevent tampering or unauthorized alteration of the codes. The system is described as applied to an automobile ignition circuit to prevent unauthorized use of the automobile.

3,754,149

OPTICAL DETECTOR FOR DETECTING RECTIFIER TUBE FAILURES AND RF ELECTRICAL DISCHARGES

Chester C. Thompson, Jr., Roslyn Heights, N.Y., assignor to Radiation Dynamics, Inc., Westbury, L.I., N.Y.

Filed June 19, 1972, Ser. No. 263,773
Int. Cl. H01h *35/00*
U.S. Cl. 307—117 **14 Claims**



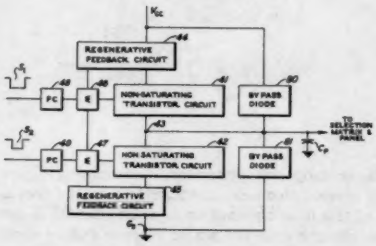
An optical detector in a high voltage system senses the blue glow discharge characteristic of insipient failure in rectifier tubes and removes system power. In a preferred embodiment the rectifier tubes are part of a voltage multiplier in a charged particle accelerator and an RF transformer is part of the high voltage supply. Another optical detector is employed to remove power from the accelerator upon sensing blue light in an arc discharge at the RF transformer coil.

3,754,150

REGENERATIVE SUSTAINER VOLTAGE GENERATOR

Donald D. Leuck, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 23, 1971, Ser. No. 211,250
Int. Cl. G06k *15/18*
U.S. Cl. 307—149 **6 Claims**



There is disclosed an improved sustaining voltage supply system for driving a gas discharge display panel having row-

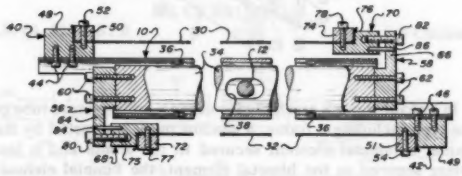
column conductor arrays, the matrix cross points of which are non-conductively coupled to a gaseous discharge medium in the panel. A pair of non-saturating transistor amplifier circuits are series connected and have the intermediate point thereof connected to supply the sustainer voltage to the panel. Each non-saturating amplifier circuit is provided with a regenerative feedback circuit. The feedback voltage is proportional to the load current during the "on" portion of its cycle. When the "off" portion of its cycle is reached, the feedback circuit is disabled.

3,754,151

THERMAL MOTOR AND GENERATOR

Robert O. Clark, 11916 El Solindo N.E., Albuquerque, N. Mex.

Filed Sept. 20, 1972, Ser. No. 290,722
Int. Cl. H02p 9/04
U.S. Cl. 290—1 **13 Claims**



A thermal motor with an elongated housing, rotatably mounted on a transverse axis, defining a channel for reciprocating longitudinal motion within the housing of a coaxially supported bar and having a pair of parallel linearly heat-expansible bands stretched under continual tension along two opposite sides. One end of each band is fixed to the housing at each of its opposite ends and the other ends of the bands are linked respectively to the extremities of the bar, thereby interconnecting the two bands through the bar. Radiant heat is directed along the plane of rotation of the housing so that while one band is exposed to the heat the other is shielded. As the exposed band heats and expands linearly, its tension tends to decrease, while the tension in the shielded band, which is simultaneously cooling and contracting, tends to increase. The bar will shift within the housing to equalize the tension, in the two bands, and the resultant unbalance in weight with respect to the transverse axis will cause the housing to rotate. The bar reverses direction every half-cycle so that the housing rotates continuously.

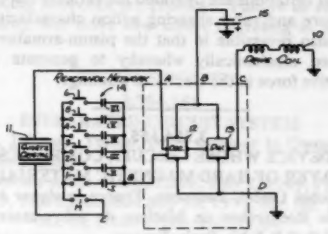
3,754,152

INCREMENTALLY ADJUSTABLE CAPACITOR UNIT FOR TUNING A CRYSTAL-CONTROLLED OSCILLATOR

Dale R. Koehler, Westwood, and William W. Mutter, Paramus, both of N.J., assignors to Bulova Watch Company, Inc., New York, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,348
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 **6 Claims**

A capacitor unit adapted to adjust the frequency of a crystal-controlled oscillator in incremental steps, the oscillator serving as a frequency standard for an electronic timepiece. The unit is constituted by a bank of capacitors whose respective values fall into a binary series, each capacitor being associated with a switch arranged to connect the capacitor in parallel relation to the other capacitors in the bank, whereby the reactance presented by the unit may be varied incrementally by selective operation of the switches to create a reactance range whose lowest value is determined by the smallest capacitor alone, whose highest value is determined by the sum of all the capacitors in the bank, and whose



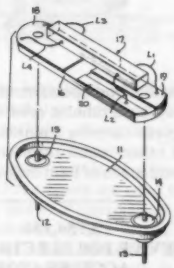
intermediate values are determined by the capacitors singly or in shunt combinations thereof.

3,754,153

CRYSTAL MOUNTING ASSEMBLY

John J. Carpenter, Lynbrook, and Charles C. Spreckels, Huntington, both of N.Y., assignors to Bulova Watch Company, Inc., New York, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,177
Int. Cl. H01v 7/00
U.S. Cl. 310—9.1 **6 Claims**



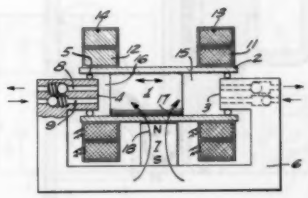
A crystal mounting assembly provided with a hermetically sealed and evacuated envelope in which a crystal unit is supported on a rigid ceramic substrate by means of strain-free leads connecting the crystal electrodes to contacts plated on the substrate. The substrate contacts are connected to terminal pins projecting from the envelope, whereby the lead-supported crystal is mechanically isolated from and unaffected by stresses imposed on the pins.

3,754,154

SEALED PUMP AND DRIVE THEREFOR

Philip E. Massie, 4220 Irving Pl., Culver City, Calif.

Filed Feb. 8, 1971, Ser. No. 113,321
Int. Cl. H02k 33/00
U.S. Cl. 310—30 **5 Claims**



A completely sealed magnetically driven pump havng a piston-armature driven by electrical windings. Unique electri-

cal driving circuits are provided for the pump embodying feed-back windings magnetically coupled with the driving windings of the pump for controlling the reciprocation. Mechanical variations are provided for variable displacement, high pressure and valve shearing action characteristics. The device is also reversible in that the piston-armature can be reciprocated mechanically whereby to generate pulsating electromotive force in the electrical windings.

3,754,155

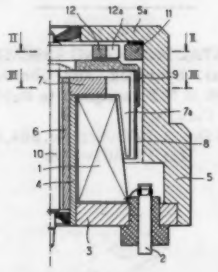
MOTOR DEVICE WHOSE CIRCUIT, COMPRISES A THIN LAYER OF HARD MAGNETIC MATERIAL

Claude Michel Oudet, Besancon, France, assignor to Societe Civile de Recherches en Matiere de micro-moteurs electriques S.O.C.R.E.M., Paris, France

Filed May 10, 1972, Ser. No. 252,116

Int. Cl. H02k 21/12

U.S. Cl. 310—156 **4 Claims**



Micro-motor with a homopolar structure, comprising a coil on the base on which a tubular core is fitted, a second tube fitted on a pole piece carrying a pinion, these two tubes being fitted one in the other, and a rotor comprising a bell with a thin cylindrical wall made of hard magnetic material.

3,754,156

SEALING DEVICE FOR ELECTRIFIED PARTICLE ACCELERATOR

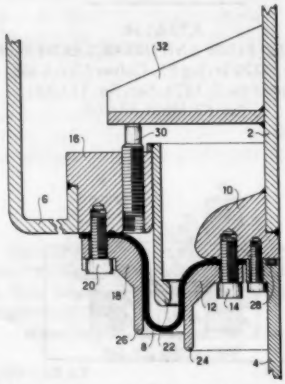
Paul Dedieu, Bourg-la-Reine, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed Mar. 12, 1971, Ser. No. 123,521

Claims priority, application France, Mar. 13, 1970, 7009179

Int. Cl. H05h

U.S. Cl. 313—63 **5 Claims**



A sealing device for an electrified particle accelerator consisting of a flexible ring-shaped membrane surrounding the output of the tube and joining this output to the wall of the pressurized chamber in which the tube is arranged vertically. The membrane having a U-shaped meridian cross section with vertical branches. One figure.

3,754,157

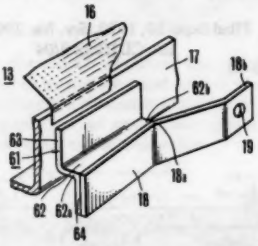
STEPPED BIMETALLIC SHADOW MASK MOUNTING ELEMENT

Eiichi Yamazaki, Ichihara-shi Chiba-Ken, and Takao Kawamura, Mobara-shi, Chiba-ken, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 30, 1971, Ser. No. 185,278

Int. Cl. H01j 29/02, 29/06

U.S. Cl. 313—85 S **6 Claims**



In a shadow mask assembly for use in a color picture tube of the type including a frame, a shadow mask supported by the frame, a bimetal element secured to the frame and a leaf spring secured to the bimetal element, the bimetal element comprises an upper side portion secured to the frame, a lower side portion secured to the leaf spring and a flat step intermediate the upper and lower sides, the width of the intermediate flat step gradually varying from one end to the other end of the step.

3,754,158

CHARACTER GENERATING DEVICE

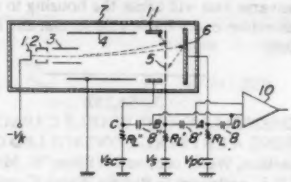
Yoshitaka Kaji, Takatsuki; Hiroshi Suzuki; Yoshio Nakagawa, and Osamu Konosu, all of Kyoto, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Dec. 28, 1971, Ser. No. 213,126

Claims priority, application Japan, Dec. 29, 1970, 45/124856

Int. Cl. H01j 31/48

U.S. Cl. 315—11 **4 Claims**



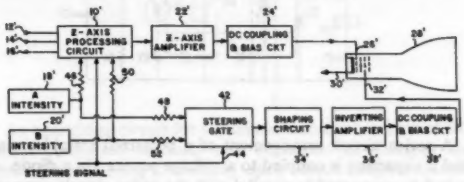
In a character generating device in which character signals are generated by scanning a character plate having character slits therein, with an electron beam, a signal developed across a load connected with an electrode provided in front of the character plate with respect to the travel of the beam by collecting with said electrode the secondary electrons emitted from a portion of the surface of said character plate other than said character slits when said beam hits against that portion and a signal developed across a load connected with a collector electrode provided in rear of the character plate with respect to the travel of the electron beam by collecting with the character plate the secondary electrons emitted from the

collector electrode when the beam passes through the character slits of the character plate and impinges on the collector electrode, have the same polarity and both the signals are added through respective coupling capacitors to produce a composite signal. The composite signal is opposite in polarity to the signal developed across the load connected with the character plate. Accordingly, if the composite signal and the signal across the load connected with the character plate are differentially combined and thereafter applied to an external circuit, then an output representing any character signal can be increased in magnitude. Consequently, since a high level output signal is obtained without increasing the electron beam current according to the proposed device, the resolution or character generating capacity is improved. If the resolution need not be so high, the accelerating voltage can be accordingly reduced.

3,754,159
AUTOMATIC FOCUS CONTROL CIRCUIT FOR A CATHODE RAY OSCILLOSCOPE

R. Eugene Andrews, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 10, 1971, Ser. No. 206,617
Int. Cl. H01j *29/56*
U.S. Cl. 315—31 R 9 Claims

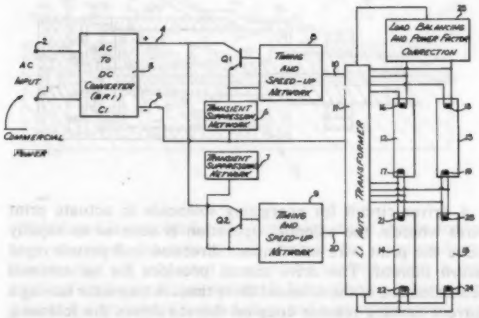


An improved automatic focus control circuit for a multitrace cathode ray oscilloscope whose intensity levels can be controlled independently is disclosed. The automatic focus control circuit adjusts the voltage to be applied to the focus electrode of the cathode ray tube to the optimum level for a selected trace according to the intensity control setting thereof immediately after the previous sweep waveform reaches the retrace level.

3,754,160
FOUR-LAMP DRIVER CIRCUIT FOR FLUORESCENT LAMPS

Stephen A. Jensen, North Hollywood, Calif., assignor to Radiant Industries, Inc., North Hollywood, Calif.

Filed Oct. 28, 1971, Ser. No. 193,449
Int. Cl. H03k *3/30*; H05b *41/29*
U.S. Cl. 315—97 6 Claims

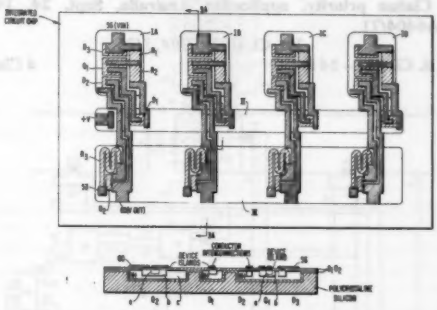


A two-transistor, high-frequency, non-saturating inverter for operating four fluorescent lamps connected in a series-parallel arrangement. The inverter is supplied either directly from a DC source, or from an AC source via a full-wave bridge rectifier. Transient supression, power-factor correction, and load-balancing networks are provided. Failure or removal of any one lamp will leave two lamps operating in a fail-safe mode.

3,754,161
INTEGRATED CIRCUIT SYSTEM

William E. Johnson, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 821,306, May 2, 1969, Pat. No. 3,614,739. This application July 14, 1971, Ser. No. 162,642
Int. Cl. H05b *37/00*; H02b *1/04*
U.S. Cl. 315—169 TV 3 Claims

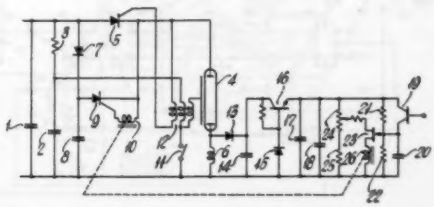


Solid state low level to high level interfacing circuits for multiple discharge gas discharge devices capable of feeding through a high level periodic sustaining voltage to the discharge device with minimum degradation. The output is the algebraic sum of the periodic sustaining voltage and a level converted logic signal. NPN circuits are used to drive one set of conductors in an array and PNP circuits are used for driving transversely related conductor arrays in the gas discharge device. Dielectric isolation in the fabrication of the integrated circuits is utilized and the circuits are such as to not require any inductance or capacitance elements, thus reducing cost and size of the circuits. The circuit appears as a low impedance to the load. There is no mixing of active elements (NPN vs PNP) in a circuit wafer or chip. Consult the specification for features and details.

3,754,162
PHOTOFLASH NETWORK

Masayoshi Katayama, Fuchu-shi, Tokyo, Japan, assignor to Kabushiki Kaisha Sunpack, Tokyo-to, Japan

Filed Mar. 3, 1971, Ser. No. 120,539
Claims priority, application Japan, Sept. 30, 1970, 45/96315
Int. Cl. H01j *39/12*; H05b *41/36*
U.S. Cl. 315—241 P 10 Claims



A variable duration photoflash network includes a gas discharge flash tube connected through an SCR to a charge

capacitor and a transformer simultaneously applies a triggering signal to the SCR gate and the flash tube trigger electrode. A timing network includes an RC circuit whose resistor is a photoconductor and is initiated and energized with the ignition of the flash tube by the voltage developed across an inductor in series with the flashtube, which voltage charges a capacitor through a rectifier. The RC timing capacitor after the timed interval effects the triggering of an SCR which connects a voltage source across the first SCR in series opposition with the charge capacitor to open the first SCR and extinguish the flash tube.

3,754,163
PROTECTION OF TRANSFORMERS

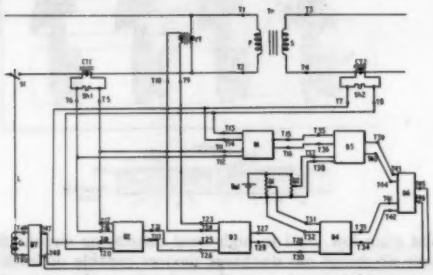
James Albert Sykes, 419 Skipton St., Ballarat, Australia

Filed Sept. 21, 1972, Ser. No. 290,887

Claims priority, application Australia, Sept. 24, 1971, PA6404/71

Int. Cl. H02h 7/04, 3/26

U.S. Cl. 317—14 D 4 Claims



A system for the protection of electrical power transformers in the event of a fault occurring in which measurements of both the differential current and the voltage at the terminals of one of the windings of the transformer are utilised to provide a tripping signal to disconnect the transformer in the event of a fault occurring. The system distinguishes between a fault and a magnetising inrush situation by detecting saturation of the transformer core and operates faster than protective devices utilising a measurement of differential current only.

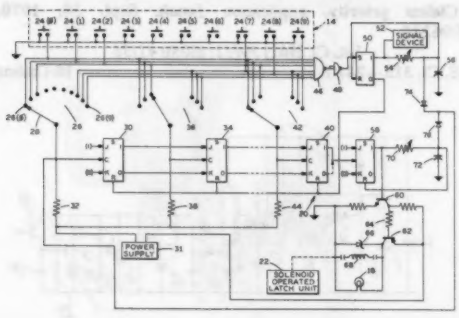
3,754,164
ELECTRONIC COMBINATION LOCK

Plato Zorzy, 189 W. Shore Dr., Marblehead, Mass.

Filed Apr. 1, 1971, Ser. No. 130,201

Int. Cl. E05b 49/00

U.S. Cl. 317—134 9 Claims



An electrically operated combination lock mechanism. A person desiring to operate the lock, actuates switches at an entrance encoder in sequence. If he enters the correct code within a predetermined time, each switch sets a bistable stage in a control unit. When all stages are set, other circuits in the control unit open a latch unit and unlock the door. If an incorrect code is entered or a code is not entered within a predetermined time, the control unit resets all the control unit stages and inhibits operation of the latch unit.

Time penalty means reduces the time remaining to enter the correct code, when an initial incorrect switch is entered.

3,754,165
ELECTROMAGNETICALLY ACTUATED SWITCHING DEVICE HAVING DELAYED DROPOUT

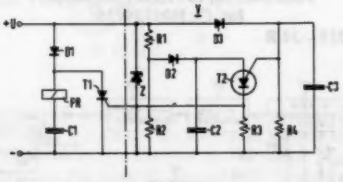
Dieter Flachsbarth, Ruckersdorf, and Hermann Schwarz, Henfenfeld, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Aug. 13, 1971, Ser. No. 171,614

Claims priority, application Germany, Aug. 29, 1970, P 20 43 010.8

Int. Cl. H01h 47/18

U.S. Cl. 317—141 S 1 Claim



A series circuit arrangement of a polarized bistable relay and a capacitor is coupled to a voltage source via a diode. A switch is connected in parallel with the series circuit arrangement. A delay circuit connected to the voltage source and to the switch controls the switch and is energized upon failure of the voltage of the voltage source.

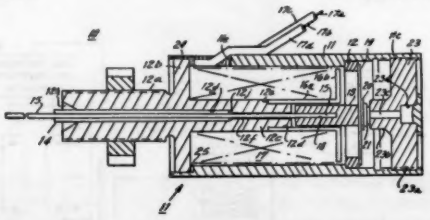
3,754,166
DRIVER CIRCUIT FOR ACTUATING PRINT WIRE SOLENOIDS

Robert Howard, Roslyn, N.Y., assignor to Centronics Data Computer Corporation, Hudson, N.H.

Division of Ser. No. 152,598, June 16, 1971, Pat. No. 3,670,431, which is a continuation-in-part of Ser. No. 37,815, May 15, 1970. This application May 12, 1972, Ser. No. 252,616

Int. Cl. H01h 47/32

U.S. Cl. 317—148.5 B 3 Claims



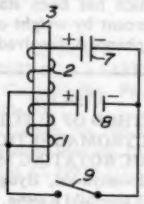
A driver circuit for energizing solenoids to actuate print wires wherein the solenoid operation is such as to rapidly move the print wire into impact direction and permit rapid return thereof. The drive circuit provides for an external determination of the solenoid drive time. A transistor having a current limiting resistor coupled thereto drives the solenoid. Current amplification means is coupled to the imput of the transistor and its input, in turn is controlled by a voltage regulating semiconductor device for maintaining constant current

through the solenoid. Capacitance means coupled to the inductor through diode means provides a discharge circuit for the solenoid. A capacitor cooperates with the solenoid inductance to form a resonant circuit enabling the current through the solenoid to decrease in a short time period and prevent generation of high voltages during reverse conduction of the inductance. Control circuit means preventing energization of the solenoids during cutoff of the solenoid power source.

3,754,167
SOLENOID

Masaru Noguchi, Tokyo, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Nov. 26, 1971, Ser. No. 202,319
Int. Cl. H01h 47/00
U.S. Cl. 317—151 2 Claims

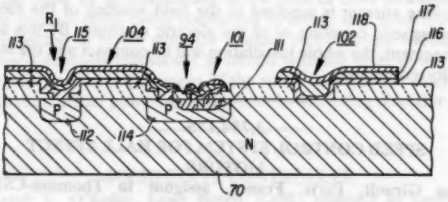


An energizing circuit for a solenoid includes a source of DC power connected normally to a capacitor for charging the latter. Upon closing a normally open switch coupled electrically to the coil of the solenoid, both the DC power supply and charged capacitor are connected electrically to the solenoid coil to provide initially a relatively large magnetic field for operating the solenoid.

3,754,168
METAL CONTACT AND INTERCONNECTION SYSTEM FOR NONHERMETIC ENCLOSED SEMICONDUCTOR DEVICES

James A. Cunningham, Dallas, and Clyde R. Fuller, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 729,985, May 17, 1968, abandoned.
This application Mar. 9, 1970, Ser. No. 17,039
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 14 Claims

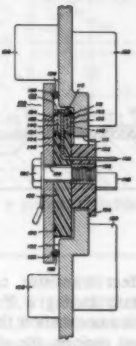


Disclosed is a molybdenum-modifying metal ohmic contact and electrical interconnection system for semiconductor devices that are subjected to corrosive environments. A contact and interconnection system is formed using a layer composed of a mixture of molybdenum and a modifier metal, such as titanium, the system having the desired characteristics of the molybdenum system but with greatly increased corrosion resistance which allows devices using such a system to be mounted in nonhermetic packages.

3,754,169
RECTIFIER BRIDGE

Russell P. Lyon, Auburn, and Paul W. Koenig, Clyde, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 818,681, April 28, 1969, Pat. No. 3,573,516. This application Feb. 2, 1970, Ser. No. 7,454
Int. Cl. H01l 17/00
U.S. Cl. 317—234 R 4 Claims

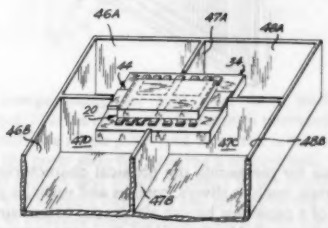


A rectifier bridge assembly is mounted against a heat receiving surface which may be a housing of an alternator. The bridge assembly includes a plurality of stacks each including an input lead located between junction containing semiconductor elements. A plate overlies the stacks in electrically conductive relation thereto to form a conduction path for rectified current. A dielectric surrounds the senuconductor elements to protect them against contamination.

3,754,170
INTEGRATED CIRCUIT DEVICE HAVING MONOLITHIC RF SHIELDS

Yukio Tsuda, Atsugi-shi, Kanagawa-ken; Shigeo Matsumoto, Sagamihara-shi, Kanagawa-ken, and Tadaharu Tsuyuki, Isehara-shi, Kanagawa-ken, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 22, 1972, Ser. No. 282,859
Claims priority, application Japan, Aug. 26, 1971, 46/65272
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R 9 Claims

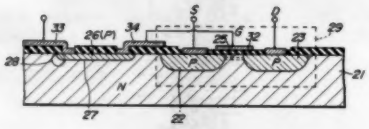


A monolithic, multiple integrated circuit device for use in the radio frequency (RF) stages in a television receiver in which monolithic RF shields are provided to isolate the multiple circuits on the same integrated circuit chip.

3,754,171
INSULATED GATE TYPE FIELD EFFECT SEMICONDUCTOR DEVICE HAVING A BREAKDOWN PREVENTING ELEMENT

Norio Anzai, Kodaira-shi; Takeshi Takagui, Musashino-shi; Yasunobu Kosa, Kodaira-shi; Masaharu Kubo, Kokubunji-shi, and Hiroto Kawagoe, Kodaira-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 23, 1968, Ser. No. 707,857
Claims priority, application Japan, Feb. 27, 1967, 42/12086
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R 7 Claims

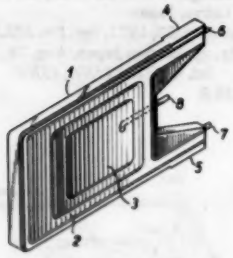


An MOS field effect transistor comprising an N-type semiconductor substrate having a P type diffused region formed therein which is more shallow than a P type source and a P type drain diffused regions, the shallow diffused region being connected to a gate electrode by a conductive means, and utilizing the breakdown phenomenon of a PN junction formed between the shallow diffused region and the substrate thereby to prevent the breakdown of an insulating layer under the gate electrode.

3,754,172
MEASURING CAPACITOR

Dieter Hoffmann, Uster, Switzerland, assignor to Zellweger Ltd., Uster, Switzerland

Filed Aug. 2, 1971, Ser. No. 168,150
Claims priority, application Switzerland, Aug. 4, 1970, 11710
Int. Cl. H01g *1/06*
U.S. Cl. 317—246 6 Claims

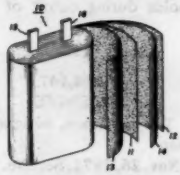


A device for measuring the physical characteristics of textile materials, such as slivers, rovings and yarns, is provided in the form of a capacitor having electrodes comprising a pair of substantially parallel bodies of high frequency ceramic material having plane parallel surfaces and being separated by an air space to permit passage of the textile material therethrough. Each ceramic body is provided with one conductive coating forming the capacitor electrode and a surrounding coating serving as a shield. A terminal extends through said ceramic body from one end thereof into contact with the capacitor electrode.

3,754,173
STABILIZED ESTER IMPREGNATED CAPACITOR

John W. Eustance, 7838 Merritt Rd., South Glens Falls, N.Y.

Filed Aug. 16, 1972, Ser. No. 281,204
Int. Cl. H01g *3/195*
U.S. Cl. 317—259 17 Claims

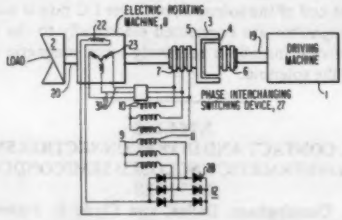


A capacitor impregnant comprises an aromatic ester such as dioctyl phthalate which has been stabilized with between about 0.1 and 10 percent by weight of an epoxide such as diglycidyl ether of bisphenol A dissolved therein.

3,754,174
EXCITING METHOD OF ELECTRIC MACHINE COMBINING ELECTROMAGNETIC COUPLING WITH ELECTRIC ROTATING MACHINE

Fukuo Shibata, Nishinomiya-shi, Hyogo, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Aug. 4, 1972, Ser. No. 278,150
Claims priority, application Japan, Aug. 6, 1971, 46/59779; Nov. 15, 1971, 46/91394
Int. Cl. H02p *7/36*
U.S. Cl. 318—9 15 Claims



An electromagnetic coupling is connected mechanically with an electric machine whose armature winding is connected electrically with that of the electromagnetic coupling, and one of the two rotors of the electromagnetic coupling drives a load and the other rotor is driven by a driving machine. There is provided a transformer whose primary winding is supplied with electric power from the armature winding of the electromagnetic coupling and from which an exciting current is supplied to the field winding of the electromagnetic coupling or of the electric machine. By this arrangement, the whole installation will be compact and the stability will be high.

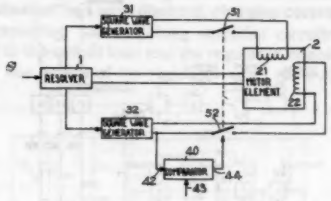
3,754,175
SPEED CONTROL SYSTEM FOR HALL EFFECT MOTORS

Jean Girault, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 3, 1970, Ser. No. 8,317
Claims priority, application France, Feb. 11, 1969, 6903146
Int. Cl. H02p *5/16*
U.S. Cl. 318—138 7 Claims

In a Hall effect motor whose windings are supplied with squarewave signals whose phases are determined by the Hall generators of a resolver element, a comparator circuit receives a first signal in phase with one of those squarewave signals, the frequency of this first signal being representative of the speed of the motor. The power supply circuit supplying

the windings is adjusted to supply the necessary power for the maximum speed which can or may be required from the motor. When the aforesaid frequency exceeds a threshold



frequency, which is a function of a reference signal also supplied to the comparator circuit, the latter causes the temporary interruption of the supply to the windings.

3,754,176

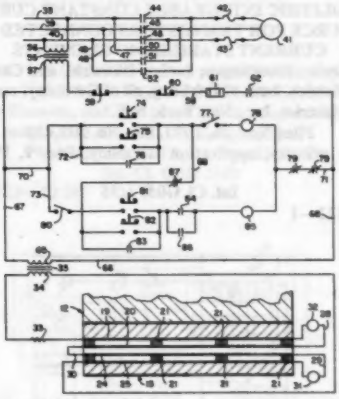
ELECTRIC CIRCUIT FOR A SAFETY DOOR EDGE

Norman K. Miller, Concordville, Pa., assignor to Miller Brothers, Concordville, Pa.

Continuation-in-part of Ser. No. 166,782, July 28, 1971, abandoned. This application May 26, 1972, Ser. No. 257,311

Int. Cl. H02p *1/22*

U.S. Cl. 318—266 **7 Claims**



For an electrically powered door having a safety edge, an electric circuit including at least a pair of normally spaced conductor strips resiliently deflectable into engagement with each other by an obstruction in the path of door movement, the contact strips being connected in series, and relay means connected in series with the contact strips having normally closed contacts connected in circuit with the door powering means, so that engagement of the strips operates the relay to prevent further powering of the door in its closing direction.

3,754,177

SOLID STATE CONTROLLER

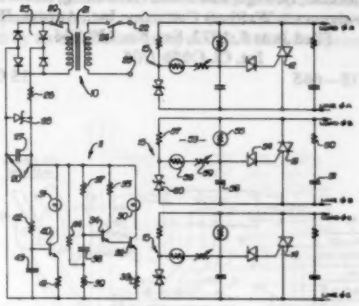
Royal V. O'Reilly, Long Beach, Calif., assignor to Lectron Corporation, Carson, Calif.

Filed Sept. 5, 1972, Ser. No. 286,412

Int. Cl. H02p *9/00*

U.S. Cl. 318—480 **12 Claims**

A solid state circuit for slow turn on and turn off of power to a load to limit surges and transients normally associated with the switching of large loads. A thyristor and a switching unit for turning the thyristor on and off, with a phase shift network in the switching unit for turn on time control. A radiation sensitive resistor in the phase shift network illuminated by a source in turn energized by a porportional control circuit having a time delay for build-up and decay of illumination. A two-



step delay circuit, and a circuit suitable for single phase and three phase systems.

3,754,178

APPARATUS FOR ADJUSTING THE TOOLS OF A MULTI-SPINDLE TOOL MACHINE

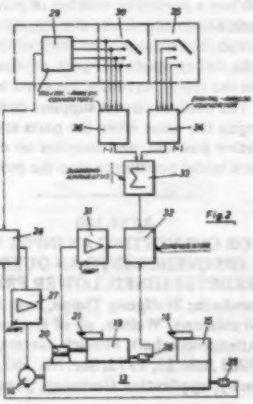
Erich Dormehl, and Hans Maas, both of Giessen, Germany, assignors to Heyligenstaedt & Company Werkzeugmaschinenfabrik GmbH, Giessen, Germany

Filed July 2, 1971, Ser. No. 159,118

Claims priority, application Germany, July 4, 1970, P 20 33 250.7

Int. Cl. G05d *23/75*

U.S. Cl. 318—572 **1 Claim**

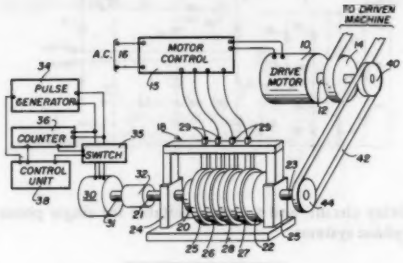


Means compensating for tool wear in a multi-spindle machine tool. A cross slide, as for a lathe, is provided carrying one tool, such as a single point tool. A carrier is moveably supported on the cross slide for carrying a second tool, such as a single point tool. A first feeler responds to the position of the cross slide and suitable switching and driving means adjust the cross slide to a proper displacement from a given zero position of the numerical control apparatus to compensate as desired in such position for tool wear. A second feeler responds to the location of said carrier on said cross slide and through further switching, summing and comparing apparatus automatically moves said second tool on the cross slide to compensate as required for tool wear and automatically maintains a constant spacing between the working edges of said tools.

3,754,179
REMOTE POSITION CONTROL SYSTEM INCLUDING ELECTRIC MOTOR AND CONTROL CIRCUIT THEREFOR

Alex J. Waltkoss, Oswego, and Robert A. Suding, Aurora, both of Ill., assignors to Waltkoss Company, Inc., Aurora, Ill.

Filed June 5, 1972, Ser. No. 259,904
Int. Cl. G05b 1/06
U.S. Cl. 318—665 15 Claims



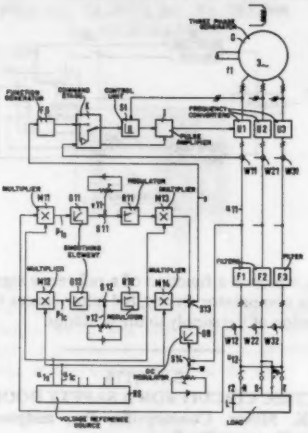
An electric motor is connected to a device to be positioned and is controlled by a control circuit including a potentiometer device which provides a variable resistance in the control circuit. The potentiometer device may include a pair of potentiometers which are simultaneously controlled to control the direction and speed of the motor. The potentiometer device has a rotor and a stator, both of which are mounted for movement, with one part, such as the rotor, positioned by a stepping motor. The stepping motor may be operated by pulses from a pulse generator, and the pulses may also be applied to a counter. When a particular number of pulses are received, the counter can act to terminate the supply of pulses to the stepping motor so that it stops. The shaft of the drive motor is coupled to the other movable part of the potentiometer device, such as the stator, to return the parts to the initial relative position. The control circuit supplies current to the drive motor to energize the same when the parts are displaced from the initial relative position, and supplies no current when the parts are at such initial position to stop the motor.

3,754,180
CIRCUIT FOR CONVERTING AN INPUT VOLTAGE OF VARIABLE FREQUENCY INTO AN OUTPUT VOLTAGE OF A PREDETERMINED, LOWER FREQUENCY

Franz Rauschenbach; Wolfgang Timpe, both of Erlangen, and Hermann Waldmann, Weiher, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed June 23, 1972, Ser. No. 265,688
Claims priority, application Germany, June 25, 1971, P 21 31 757.7
Int. Cl. H02m 5/22
U.S. Cl. 321—61 13 Claims

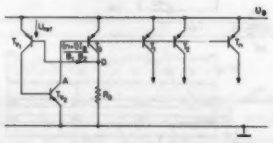
A circuit for converting an input voltage of variable frequency into an output voltage having a predetermined, lower frequency by means of a controlled static frequency converter which is operated as a direct link inverter. The output voltage of the frequency converter is multiplied in a first multiplier circuit by a sine voltage and in a parallel connected second multiplier circuit by a cosine voltage. The respective a-c components in each parallel circuit are filtered out in succeeding smoothing members. The remaining d-c voltage components are then each added in a summing point to preset reference values. The sum voltages are each fed to a voltage regulator, which is followed by a third and fourth multiplier, respectively. In the third and fourth multiplier the output of the voltage regulator is multiplied by the identical sine and cosine voltages. The last-mentioned multipliers are then connected to a common summing point which feeds a control voltage to the control unit of the frequency converter.



3,754,181
MONOLITHIC INTEGRABLE CONSTANT CURRENT SOURCE FOR TRANSISTORS CONNECTED AS CURRENT STABILIZING ELEMENTS

Walter Kreitz, Mundingen; Lothar Bloss feld, and Otmar Siegfried Dietrich, both of Frieburg, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,426
Claims priority, application Germany, Dec. 9, 1970, P 20 60 504.3
Int. Cl. G05f 1/56
U.S. Cl. 323—1 1 Claim



To reduce sensitivity to battery voltage variation in a multiple transistor monolithically integrated constant current source, the control transistor is replaced by an amplifier. Only a fraction of the sum of base currents of the source transistors is applied to the input of the amplifier. Also, the number of source transistors is not as limited by current gain factor as it is when a control transistor is used.

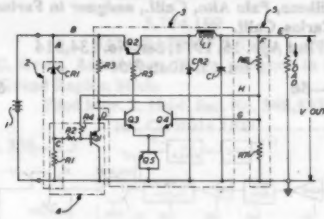
3,754,182
SWITCHING VOLTAGE REGULATOR WITH INPUT LOW VOLTAGE AND OUTPUT VOLTAGE DETECTORS

David Morris, Brooklyn, N.Y., and Donald Conti, Ridgefield, N.J., assignors to Litton Business Systems Inc., Orange, N.J.

Filed Oct. 2, 1972, Ser. No. 294,277
Int. Cl. G05f 1/56, 5/00
U.S. Cl. 323—17 10 Claims

A constant potential power supply having a Schmitt trigger regulator and switching amplifier to maintain the output load voltage within a predetermined range, and an undervoltage protection circuit which disables the regulator when the input potential goes below a predetermined level. An integrating capacitor which is part of the Schmitt trigger regulator, discharges through the load. The Schmitt trigger regulator is actuated when the output potential decreases below a certain

maximum value and is disabled as the output potential goes below a certain minimum value; it is also actuated when the output potential increases to this minimum value and is disabled as the output potential goes below this maximum value. After actuation and until disabled, charging current is applied to the capacitor. The switching amplifier circuitry, which is coupled to the output load and the regulator, enables and disables the line switch of the regulator when the output voltage



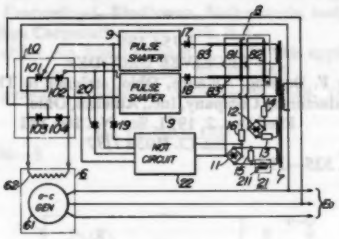
increases to this minimum value and when it decreases below this same minimum value. The output triggering section of the regulator disables the line switch when the output voltage increases above this maximum value and when it decreases below this same maximum value. The particular arrangement between the switching amplifier and the regulator provides significant control of the hysteresis as well as decreasing it and improving the overall regulation of the circuit.

3,754,183

SYSTEM FOR CONTROLLING AN ELECTRIC OUTPUT WITH REDUCED RECOVERY TIME

Masahiko Ibamoto, and Hisakatsu Kiwaki, both of Katsuta-shi, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Mar. 28, 1972, Ser. No. 238,785
Int. Cl. G05f 1/40
U.S. Cl. 323—22 SC **3 Claims**



In the control of an electric output with respect to a reference value, the gain of a control means is controlled or changed to a higher value when the difference between the prevailing value of the electric output and a reference value exceeds a predetermined value.

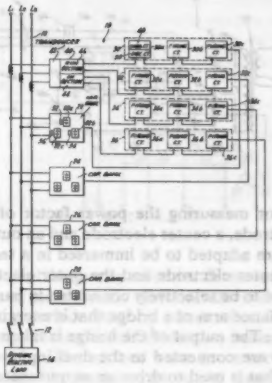
3,754,184

REACTIVE POWER COMPENSATION CONTROL SYSTEM

David W. Stone, Franklin, Wis., assignor to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed June 21, 1972, Ser. No. 264,780
Int. Cl. G05f 1/68
U.S. Cl. 323—102 **9 Claims**

A reactive power compensation control system is provided for a three phase ac electric power supply system which exhibits power factor changes when subjected to large reactive draws by dynamic reactive loads. The control system comprises four capacitor banks switchable in or out of the power system by solid state switches. Each capacitor bank comprises three delta connectible capacitors, one capacitor for each pair of phase lines, and each capacitor is switched by one solid state switch. Each solid state switch comprises a pair of inverse parallel connected SCR's. Each solid state switch is controlled by an individual firing circuit which comprises a charg-



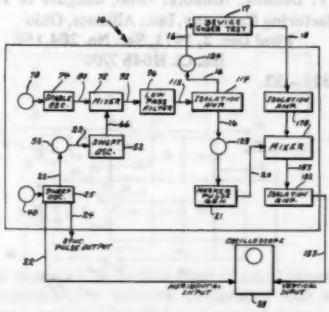
ing circuit (for operating the charging SCR) and a discharging circuit (for operating the discharging SCR). All 12 firing circuits are controlled by a control circuit which comprises a KVAR transducer coupled to the power supply system for sensing reactive power conditions therein and ON and RUN circuits which operate the firing circuits.

3,754,185

AUDIO FREQUENCY SWEEP GENERATOR

Stephen R. Troy, 104-20 89th Ave., Richmond Hill, N.Y.

Filed May 17, 1972, Ser. No. 254,138
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R **10 Claims**



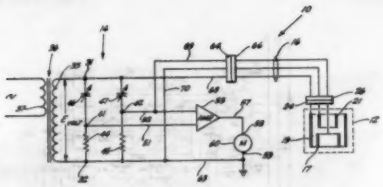
An audio frequency sweep generator which generates a pulse waveform of essentially constant energy per pulse, at a swept pulse repetition rate. Unijunction transistors are utilized in the oscillators which vastly improves these circuits and further simplify the attainment of a linear change of frequency with time in the swept oscillator. Furthermore, by the use of post-marker injection employing stable LC wave traps, marker pulses at various frequencies are provided to permit accurate, dependable calibration of a trace directly on an oscilloscope screen.

3,754,186

POWER FACTOR MEASURING CELL ARRANGEMENT

Mahesh K. Sambhu, Wayne, N.J., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 8, 1972, Ser. No. 251,429
Int. Cl. G01r 27/02
U.S. Cl. 324—65 R 5 Claims



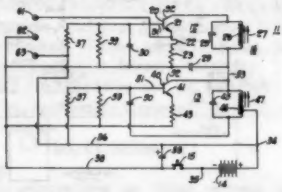
A cell for measuring the power factor of oil including a guard electrode, a center electrode and an outer electrode, all of which are adapted to be immersed in a test sample of the oil. The center electrode and the outer electrode of the cell are adapted to be selectively connected in parallel with a variable impedance arm of a bridge that is energized by a suitable a.c. source. The output of the bridge is taken on two conductors which are connected to the dual inputs of a differential amplifier that is used to drive an output meter. The bridge is initially balanced with the cell disconnected. When the cell and sample are connected to the bridge the meter reading reflects the total current $I = I_C + I_T$ flowing between the cell electrodes. The bridge is then readjusted so that a null indication is provided at the meter. The ratio of the meter reading with the meter nulled to the reading I above is proportional to the power factor of the cell oil. In one embodiment the guard electrode of the cell is grounded, and in an alternative embodiment the guard electrode is driven at the same potential as the center electrode by an operational amplifier arranged in a voltage follower configuration. The connections between the cell and the bridge can be made by a triaxial cable so that power factor readings on samples can be made in a remote chamber at other than ambient temperature.

3,754,187

TRANSMITTER-RECEIVER SYSTEM

Andrew F. Deming, Alliance, Ohio, assignor to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed Dec. 2, 1971, Ser. No. 204,150
Int. Cl. H04b 7/00
U.S. Cl. 325—37 18 Claims



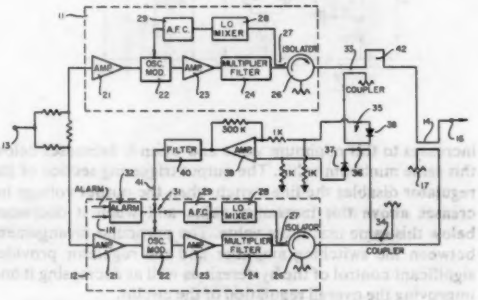
A transmitter-receiver system is disclosed which may be used for remote control purposes. The transmitter has a radiated signal with a first frequency carrier modulated with a second frequency. A subcoder may be selectively plugged into the transmitter and has a third frequency which influences or modulates the radiated signal at a third frequency rate. The receiver of the system has means responsive to the first and second frequencies and also has a decoder selectively plugged into the receiver which has a disabling bias means and a third frequency responsive means. The disabling means normally prevents any signal from reaching the load of the receiver and the third frequency responsive means has an output when the third frequency is present which terminates the disabling means so that the receiver is enabled and a signal is passed to the receiver load. Without the decoder plugged into the receiver, the receiver is completely operable on the first and second frequencies to supply a signal to the load.

3,754,188

REDUNDANT FM TRANSMITTING SYSTEM

Mark W. Wilkens, Palo Alto, Calif., assignor to Farinon Electric, San Carlos, Calif.

Filed Apr. 16, 1971, Ser. No. 134,814
Int. Cl. H04b 7/00
U.S. Cl. 325—56 6 Claims



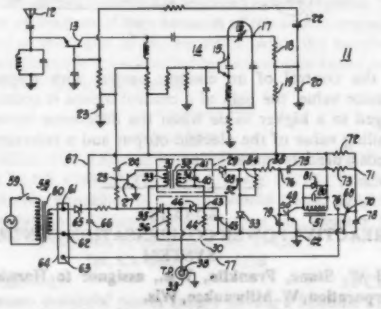
A redundant FM or PM transmitting system in which two transmitters operating at the same carrier frequency are modulated by a common baseband input and the RF outputs are combined and applied to the antenna. A sample of the RF output from each of the transmitters is applied to a phase detector which develops a signal having a component representative of the phase differences in the carrier. The signal is used to phase lock the second transmitter to the first whereby the output of the transmitters can be combined without objectionable intermodulation distortion.

3,754,189

RECEIVER DECODER

Andrew F. Deming, Alliance, Ohio, assignor to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed Dec. 2, 1971, Ser. No. 204,141
Int. Cl. H03d 1/32
U.S. Cl. 325—392 34 Claims



A receiver decoder is disclosed with the receiver having a first carrier frequency modulated by a second frequency and also having present a third frequency lower than the carrier frequency. The receiver is operable as a normal receiver on just the carrier and modulation frequencies, or with the decoder plugged into the receiver the combination also is operable with a third frequency. With the decoder connected

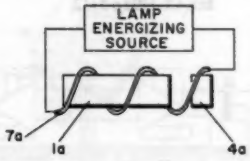
in the receiver, a received signal containing the proper first, second and third frequencies must be received before a signal is provided to the output of the receiver. The decoder supplies a bias disabling the receiver until a signal is received containing the proper first and third frequencies, whereupon the disabling bias is terminated for a time period. If during this time period a signal is received containing the proper first and second frequencies, then an output is provided to the main load.

3,754,190

SATURABLE FILTER

Lloyd G. Cross, Ann Arbor, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Mar. 2, 1964, Ser. No. 348,532
Int. Cl. H01s 3/00
U.S. Cl. 330—4.3 4 Claims



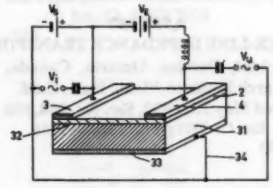
A multi stage amplifier achieves interstage isolation by utilizing a saturable filter. The filter provides the isolation through its own inherent structure and does not require any external electrical or mechanical signal.

3,754,191

SEMICONDUCTOR DEVICE FOR AMPLIFYING MICROWAVE

Gerard Adriaan Acket, and Marinus Teunis Vlaardingerbroek, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 856,132, Sept. 8, 1969. This application Aug. 21, 1972, Ser. No. 282,165
Claims priority, application Netherlands, Sept. 10, 1968, 6812862
Int. Cl. H03f 3/04
U.S. Cl. 330—5 4 Claims



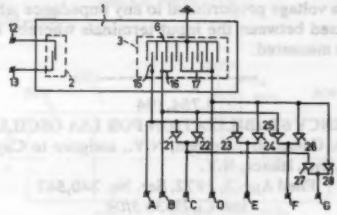
A semiconductor microwave amplifier is described with a construction to suppress the formation of travelling domains producing unwanted oscillations. In one embodiment, the device construction includes an active epitaxial layer of one conductivity type on a substrate of the oppsoite conductivity type, resulting in a p-n junction which is reversed biased during use. Contacts are provided on the active layer. Means are also provided to introduce and extract signals from the device.

3,754,192

ELECTROMECHANICAL FREQUENCY SELECTIVE DEVICES

John Siegfried Palfreeman, Betchworth, Surrey, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 5, 1972, Ser. No. 215,499
Claims priority, application Great Britain, Jan. 5, 1971, 439/71
Int. Cl. H03f 3/04
U.S. Cl. 330—5.5 4 Claims



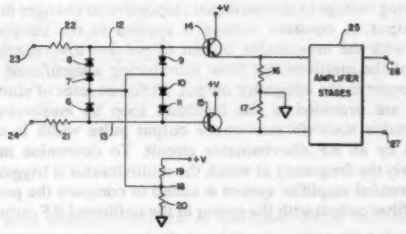
Electromechanical frequency selective filters are disclosed wherein a wafer of piezoelectric material converts an electric input signal into a surface wave by means of an input transducer comprising electrodes of conductive material on the surface of the wafer. The surface wave is converted into an electric output signal by means of an output transducer comprising two comb-shaped interdigital electrodes made of conductive material and arranged on the same surface of the wafer of piezoelectric material. Either or both of the transducers are split into a plurality of sub-electrodes which are electrically insulated from one another. Signals produced at output transducer sub-electrodes are separately applied to associated unidirectional amplifiers whose outputs are combined to obtain a desired overall output signal.

3,754,193

INPUT BIAS AND SIGNAL CONDITIONING CIRCUIT FOR DIFFERENTIAL AMPLIFIERS

Clyde J. Reinhard, 220 ½ Reposado, La Habra Heights, Calif.

Filed Apr. 19, 1971, Ser. No. 135,148
Int. Cl. H03f 3/68
U.S. Cl. 330—30 R 10 Claims



The input terminals of the first stage of a multistage amplifier are connected to a network comprising four strings of unidirectional devices. The first and second strings are connected in series and poled in a first direction between the input terminals of the first stage. The second and third strings are connected in series between the input terminals and poled opposite to the first direction. The junctions between the first and second strings and the third and fourth strings are joined and a voltage potential applied thereto. In response to the voltage potential a bias current is conducted to the first stage through the second and fourth strings, the first and third strings being reverse biased. The first and third strings become forward biased to clamp the input terminals to the voltage potential when the magnitude of signal voltage at the input

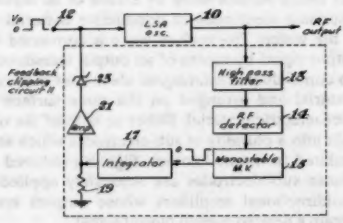
terminals with respect to circuit ground exceeds the magnitude of the voltage potential. The first stage is coupled to a second stage, circuit ground of the first stage being isolated from circuit ground of the second stage and is coupled to a pair of zener diodes which are in turn connected in series and similarly poled and across which is generated an alternating voltage limited in amplitude by the zener voltage of the diodes. The junction of the diodes is connected to the circuit ground of the first stage. A pair of impedances couple current from the diode pair to the input terminals of the first stage. The alternating current applied to the input terminals produces a voltage proportional to any impedance which may be connected between the input terminals whereby such impedance is measured.

3,754,194

FREQUENCY STABILIZATION FOR LSA OSCILLATOR

William O. Camp, Jr., Dryden, N.Y., assignor to Cayuga Associates, Inc., Ithaca, N.Y.

Filed Apr. 3, 1972, Ser. No. 240,567
Int. Cl. H03b 3/04
U.S. Cl. 331—1 R **21 Claims**



To compensate for changes in the output frequency of an LSA mode oscillator, the bias voltage pulse applied to the oscillator is varied by means of a feedback circuit. The output of a high or low pass filter receiving the oscillator RF output is retified to trigger a monostable multivibrator. In an advantageous technique, the pulse output of the multivibrator is integrated, amplified and applied to a Zener diode which is connected to the bias voltage input of the oscillator to provide a clipping voltage to the oscillator responsive to changes in the RF output. A constant voltage is applied to the integrator along with the monostable output to prevent low repetition rates of the multivibrator from introducing a significant AC component in the integrator output. Different rates of convergence are provided in the feedback loop by employing a monostable multivibrator whose output pulse width is controlled by an RF discriminator circuit. To determine more precisely the frequency at which the multivibrator is triggered, a differential amplifier system is added to compare the power in the filter output with the power in the unfiltered RF output.

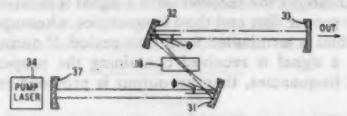
3,754,195

DOUBLE-FOLDED ASTIGMATICALLY COMPENSATED OPTICAL CAVITIES

Wilbur Dexter Johnston, Jr., Holmdel, and Peter Klaus Runge, Fair Haven, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 16, 1972, Ser. No. 235,198
Int. Cl. H01s 3/08
U.S. Cl. 331—94.5 **5 Claims**

There is disclosed an improvement of a folded astigmatically compensated optical resonator of the type heretofore used for dye lasers to provide more efficient operation by providing a beam waist at a unique axial position in the highly focusing section of the resonator. To obtain the unique beam waist, another section is added to the folded resonator so that the highly focusing section is the middle section. In addition,



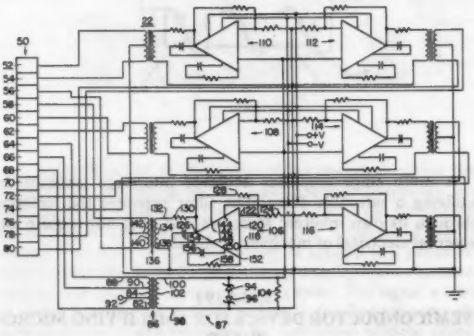
resonator loss due to coma can be reduced by orienting the two end sections so that they intersect each other.

3,754,196

COMMUNICATIONS BRIDGE FOR IMPEDANCE MATCHING OF A PLURALITY OF LINES

James T. Collins, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Feb. 17, 1972, Ser. No. 227,141
Int. Cl. H01p 5/12
U.S. Cl. 333—8 **8 Claims**



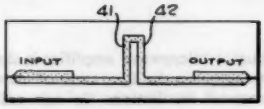
This invention describes a communications coupling circuit for bidirectionally coupling a plurality of remote units through a single four wire transmission line to a central computer in a polling type data communications system. The circuit may be used with transmission lines having either a 600 ohm or a 900 ohm characteristic impedance and includes means for proper transmission line termination through the use of transformers. The circuit also utilizes resistive and inductive coupled integrated circuit operational amplifiers which provide the signal gain, filtering, feedback and impedance isolation to compensate for signal losses.

3,754,197

MEANDER-LINE IMPEDANCE TRANSFORMER

Edward G. Cristal, Dundas, Ontario, Canada, assignor to Sanford Research Institute, Menlo Park, Calif.

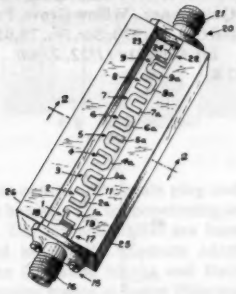
Filed May 18, 1972, Ser. No. 254,390
Int. Cl. H01p 3/08; H03h 7/38
U.S. Cl. 333—33 **6 Claims**



A microwave or UHF impedance transformer is provided which is comprised of a meander-line structure, or a hybrid meander-line structure, in which coupling between some con-

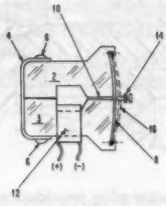
jugate (adjacent) turns in the line is negligible, whereas for other conjugate turns it is significant.

3,754,198
MICROSTRIP FILTER
Sever Anghel, Milltown, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Mar. 20, 1972, Ser. No. 236,283
Int. Cl. H03h 7/10; H01p 3/08
U.S. Cl. 333—73 S **10 Claims**



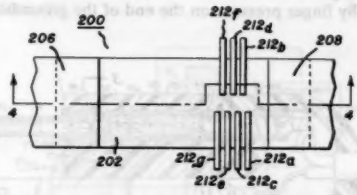
There is disclosed herein a microstrip filter having low loss and high rejection at X-band. The filter includes N microstrip open circuited, half-wavelength hairpin resonators disposed in a series coupled relationship with respect to each other, where N is an integer equal to or greater than one. A metallic housing encloses the hairpin resonators for shielding thereof to increase the unloaded Q of the resonators. An improved signal input and output coupling arrangement is also provided for the filter. The signal coupling arrangements include a microstrip conductor having a first width less than the width of the microstrip conductor forming part of each of the hairpin resonators between the input and output hairpin resonators. In the coupling arrangement, the adjacent limb and a portion of the cross-arm connected to the adjacent limb of the conductor of the input and output hairpin resonators also have said first width and the spacing of the limbs of the conductors of the input and output hairpin resonators are greater than the spacing of the limbs of the conductors of the hairpin resonators between the input and output hairpin resonators.

3,754,199
MAGNETIC MECHANICAL AMPLIFIER
Joseph Edmund Lisinski, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 29, 1972, Ser. No. 293,716
Int. Cl. H01f 7/08
U.S. Cl. 335—275 **7 Claims**



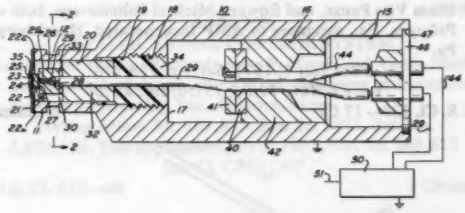
An apparatus for converting electrical pulses into amplified mechanical motion. Two magnetic core pieces retain a resilient spring so that an air gap exists between the cores. By energizing a magnetic coil on at least one of the core pieces, the core pieces are attracted together thereby forcing the deformable spring to arc outwardly and produce an amplified linear motion. The actuator is particularly useful for operating print hammers, wires or punches.

3,754,200
METAL OXIDE VARISTOR WITH SELECTIVELY POSITIONABLE INTERMEDIATE ELECTRODE
John D. Harnden, Schenectady, N.Y., assignor to General Electric Company, Syracuse, N.Y.
Filed Oct. 13, 1971, Ser. No. 188,984
Int. Cl. H01c 7/10
U.S. Cl. 338—20 **4 Claims**



A metal oxide varistor is disclosed formed of a varistor body having an alpha in excess of 10 in the current density range of from 10^{-3} to 10^{2} amperes per square centimeter. First and second electrodes are laterally spaced along the varistor body, and a third electrode is located between and spaced from the first and second electrodes. The third electrode may be slidably mounted on the varistor body or may be in the form of discrete, spaced elements fixedly attached to the surface of the varistor body.

3,754,201
HEAT SENSITIVE DETECTOR
Robert B. Adams, Tredyffrin Township, Chester County, Pa., assignor to Moore Products Co., Spring House, Pa.
Continuation-in-part of Ser. No. 618,472, Feb. 24, 1967, abandoned, and a continuation-in-part of Ser. No. 790,408, Jan. 10, 1969, Pat. No. 3,640,133. This application Feb. 3, 1972, Ser. No. 223,601
Int. Cl. H01c 7/00
U.S. Cl. 338—28 **3 Claims**

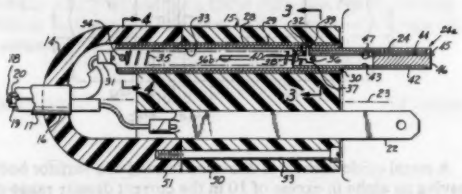


A heat sensitive detector is disclosed which includes an electrically conductive body providing a probe with a thin wall metallic end closure having a thermistor held thereagainst at the center of the closure, the body if desired having a compensating thermistor therein for temperature variation compensation.

3,754,202
GROUNDING PLUG
Richard B. Nelson, 3160 Hollycrest Dr., Hollywood, Calif.
Filed Sept. 30, 1971, Ser. No. 185,123
Int. Cl. H01r 3/06
U.S. Cl. 339—14 P **28 Claims**

An electrical connector plug for providing connection to two or more sides of a circuit with conventional prong means and having a grounding prong which can be inserted into a

grounding socket in a receptacle. The grounding prong is provided with a protruding sensing finger that is in an inactive position when the receptacle has a grounding socket, but if there is no grounding socket present, then the protruding sensing finger strikes a solid surface of the receptacle and moves backward to trigger a latch means that unlatches the grounding prong and allows it to be pushed back into the body of the plug, allowing the circuit contact prongs to enter the receptacle's live sockets to complete the electrical circuit. In order to prevent accidental triggering of this sensing finger by finger pressure on the end of the sensing finger or by force exerted on the axially-shiftable portion of the grounding prong, which might overcome the safety feature of the grounding prong, by finger pressure on the end of the grounding prong,



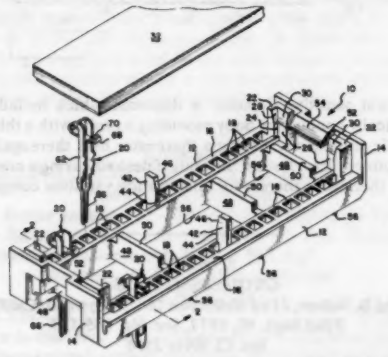
the mechanism may be safetied by an arrangement for the latch means, such that pressure applied to the protruding prong by a yieldable means such as a finger, or other yieldable portion of the body, will push the entire grounding prong back toward the plug but will prevent the protruding sensor finger from triggering the lever, therefore preventing the retraction of the grounding prong into the plug. As an additional feature, the grounding prong can be designed so that it will never be completely retracted into the plug and a grounding plate is provided for attachment to a receptacle so that when the grounding prong is used in conjunction with a receptacle not having a matching grounding socket, the retracted grounding prong will still contact the grounding plate and provide for the safe grounding of the circuit.

3,754,203

SUBSTRATE CONNECTOR AND TERMINAL THEREFORE

William Vito Pauza, and Edward Michael Poltonavage, both of Palmyra, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 1, 1971, Ser. No. 158,778
Int. Cl. H01r *11/00, 13/50;* H05k *1/04*
U.S. Cl. 339—17 CF **6 Claims**



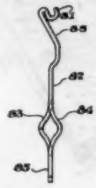
An interconnection system is disclosed for connecting ceramic substrate and the like to printed circuit boards, panels, or the like. The connector has a plurality of terminals therein each including a spring contact near one end for making contact with circuitry on a ceramic substrate, the substrate being snapped or otherwise secured in position on the connector. The other end of each terminal is a solder post and is designed to be plugged into a printed circuit board and soldered to circuitry thereon. In another form the other end of the terminal is in the form of a post to receive a wrapped electrical conductor therearound.

3,754,204

TERMINALS FOR ELECTRIC CIRCUIT AND APPARATUS

Eli Raitport, 1807 Mower St., Philadelphia, Pa., and George D. Greenly, 121 Quigley Ave., Willow Grove, Pa.

Filed Oct. 8, 1970, Ser. No. 79,027
Int. Cl. H01r *11/22, 27/00*
U.S. Cl. 339—32 R **6 Claims**



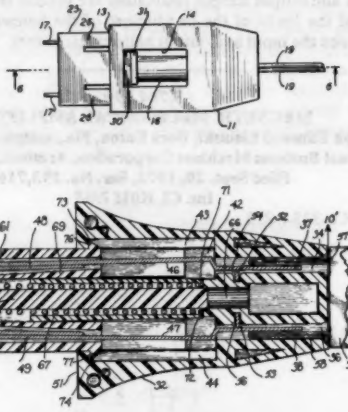
Universal terminals suitable for connecting conductors through either crimping, soldering or slip on connector, or a combination of any of these.

3,754,205

PROTECTED CONNECTOR PLUG

Attila A. Lenkey, Millburn, N.J., assignor to Lenmark Enterprises, Inc., East Orange, N.J.

Continuation-in-part of Ser. No. 23,217, March 27, 1970. This application May 19, 1971, Ser. No. 144,814
Int. Cl. H01r *13/44*
U.S. Cl. 339—42 **10 Claims**



A protected connector plug provided with a hollow, open-end housing; the open end is closed by a single, spring-loaded, slidable sheath surrounding both contact blades and having detents on it to engage a stop in the housing to retain the sheath in the housing. In one embodiment the detents are deflectable to allow the sheath to be inserted after the housing is otherwise complete. In another embodiment the sheath is properly placed within one half of the housing before the other half is joined thereto.

3,754,206

ELECTRICAL CONNECTORS

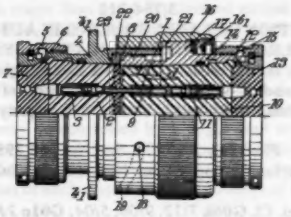
Albert Obeissart, Boulogne-Billancourt, France, assignor to Souriau & Cie, Boulogne-Billancourt, France

Filed June 10, 1971, Ser. No. 151,783

Claims priority, application France, June 15, 1970, 7021908

Int. Cl. H01r 13/54

U.S. Cl. 339—90 R 2 Claims



The connector consists of a male plug and a female plug, one of the plugs having a pin for penetrating into the socket of the outer plug. The pin and socket are borne by insulating blocks mounted in metallic supports adapted for mutual penetration. The insulating blocks and their supports have mechanical fastening means to fasten them together. An outer ring can lock the two plugs together. Two types of mechanical supports are provided for a same connector, distinguished from each other by different lengths of mutual penetration without other changes in the structure and assembly of the other parts.

3,754,207

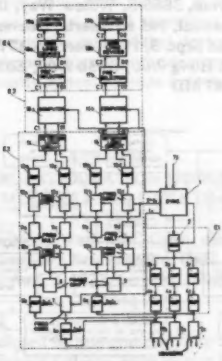
METHOD FOR DIRECTLY MEASURING THE DISTANCE TRAVELLED OVER BY A VEHICLE MOVING IN A WATER BODY, WITH RESPECT TO THE SUBMERGED GROUND SURFACE AND DEVICE THEREFOR

Robert Delignieres, Colombes, France, assignor to Institut Francais Du Petrole Des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed June 22, 1970, Ser. No. 48,002

Int. Cl. G01s 9/66

U.S. Cl. 340—3 D 15 Claims



Navigation method making use of the DOPPLER effect, for measuring the distance travelled over by a vehicle in a water body with respect to the bottom thereof comprising transmitting intermittent acoustic signals towards said water bottom, receiving the signals diffused back therefrom, measuring during a time interval smaller than the duration of the received signals, the difference between the numbers of accrued cycles, respectively at the transmission frequency and at the receiving frequency and determining from said difference, in a binary digital form, the distance travelled over by the vehicle during a time interval equal to the recurrence period of the intermittent transmitted signals.

3,754,208

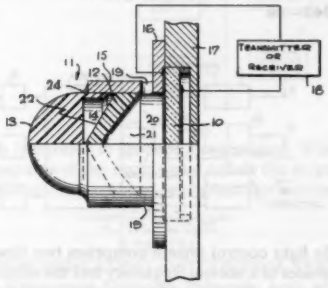
COMPOUND LENS FOR CONVERTING THE EFFECT OF LARGE-AREA SONIC TRANSDUCER TO ONE OF SMALL AREA

George J. Ellers, Redwood City, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Feb. 3, 1972, Ser. No. 223,108

Int. Cl. G01f 3/16

U.S. Cl. 340—8 L 5 Claims



A compound lens structure for converting the response of a transducer of large lateral extent to one of significantly smaller dimensions employs a converting lens having a conical front surface in contact with the rear surface of an auxiliary hemispherical lens to allow spherical sonic waves emanating from or converging toward the point of contact to enter or leave the converting lens only through the area of contact. The rear surface of the converting lens is chosen to be a hyperbola of revolution in order that diverging waves entering through the area of contact be refracted into plane waves transmitted to the transducer. Space between the two lens is sealed and filled with a gas to enhance the masking effect of the conical surface by total reflection of waves entering that sealed space from the auxiliary lens.

3,754,209

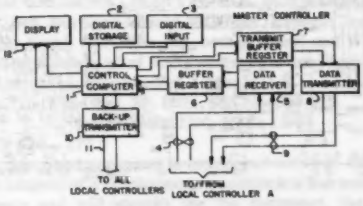
TRAFFIC SIGNAL CONTROL SYSTEM

Kenneth H. Molloy, Bedford; John P. Ward, and Victor Mark Benson, both of Acton, all of Mass., assignors to Computer Systems Engineering, Inc., Billerica, Mass.

Division of Ser. No. 109,533, Jan. 25, 1971, Pat. No. 3,675,196. This application July 3, 1972, Ser. No. 268,613

Int. Cl. G08g 1/07

U.S. Cl. 340—40 3 Claims



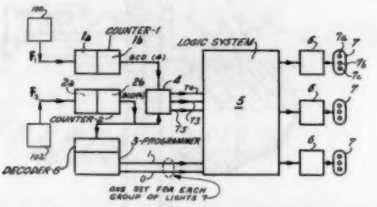
An automobile traffic signal control system controls traffic signals (lights) at a plurality of traffic intersections by way of a master controller which communicates with a local controller at each intersection and transmits pulse trains in sequence to the receivers at all the intersections, whereupon the intersec-

tion to which a specific pulse train is addressed stores the pulse train and uses each specific pulse in the train to control a specific light or signal at that intersection. In this manner, all lights and signals at all intersections are specifically each controlled by a specific pulse in a specific pulse train transmitted by the master controller to the local controllers at the intersections.

3,754,210
TRAFFIC LIGHT CONTROL SYSTEMS

Jean Claude Preti, Clamart, France, assignor to Societe de Fabrication d'Instruments de Mesure S.f.I.M., Garnier, France

Filed Mar. 30, 1971, Ser. No. 129,482
Int. Cl. G08g 1/07
U.S. Cl. 340—40 12 Claims

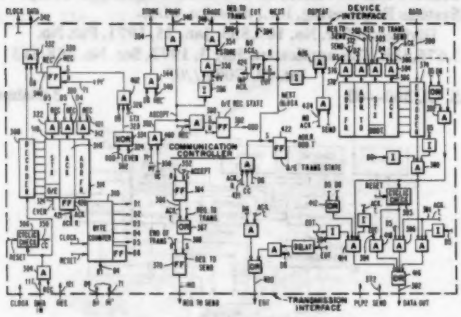


A traffic light control system comprises two timers, one of which operates at a normal frequency and the other at a much higher frequency, the second timer controlling a programmer which acts on a logic circuit which controls a power circuit for the lights. A comparator compares the output signals of the timers, and indicates when the output signals of the two timers are identical or have a given shift, whereby any spurious signals do not affect the lights. The system can be designed to take into account an external command, the state of the traffic lights, and the traffic density. A plurality of such systems can be coordinated with a minimum of interconnections.

3,754,211
FAST ERROR RECOVERY COMMUNICATION CONTROLLER

Edouard Y. Rocher, Ossining, and Stanley E. Schuster, Granite Springs, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,197
Int. Cl. G08c 25/00; G06f 11/00
U.S. Cl. 340—146.1 BA 6 Claims

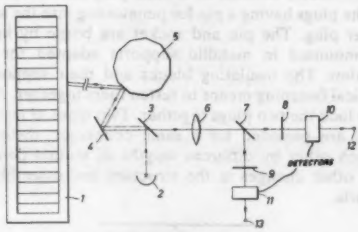


This is a communication controller that is utilized in a network consisting of a plurality of terminal stations, each station capable of transmitting and receiving digital messages. All stations within the system contain a communication controller which detects address or data errors. Properly decoded address and data message information initiates an acknowledgement response from receiving terminal stations. The presence of an address or data error initiates no response from the receiving station. The transmitting station contains automatic means for retransmitting a message if an acknowledgement is not received from the addressed receiver station within a minimum cycle-out period. The communication controller contains automatic means for discarding received messages which are a duplicate of a prior received and properly decoded message.

3,754,212
DETECTION OF LABEL FOULING IN AUTOMATIC RAILROAD CAR IDENTIFICATION SYSTEM

Albertus C. H. Borsboom, London S.E. 1, England; Jan Van Harten, and Gerrit Van Der Most, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed July 22, 1971, Ser. No. 165,299
Claims priority, application Netherlands, July 27, 1970, 7011110
Int. Cl. G06k 7/12, 9/00, 5/04; G01n 21/30
U.S. Cl. 340—146.3 K 4 Claims

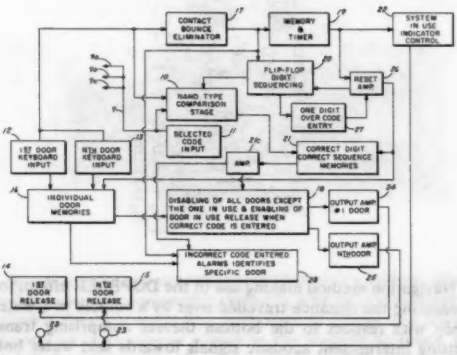


Label fouling in an automatic railroad car identification system is detected in response to the intensities of signals from coded visible panels. The identifying panels are color coded, and failing of the panels can produce errors in reading the code. The ratio of intensity of a pair of primary colors in light reflected from a white strip in the panel is used as the measure of degree of fouling.

3,754,213
ELECTRONIC COMBINATION LOCK SYSTEM

Thomas J. Morroni, 3860 S. Willow Way, Denver, Colo., and Richard J. Morroni, 105 Kramerla, Denver, Colo.

Filed Sept. 3, 1971, Ser. No. 177,710
Int. Cl. H04g 9/00; G05b 1/00; E05b 49/00
U.S. Cl. 340—147 MD 18 Claims


CONTACT BOUNCE ELIMINATOR
MEMORY & TIMER
SYSTEM IN USE INDICATOR CONTROL
FLIP-FLOP DIGIT SEQUENCING
RESET AMP
NAND TYPE COMPARISON STAGE
ONE DIGIT OVER CODE ENTRY
SELECTED CODE INPUT
1ST DOOR KEYBOARD INPUT
NTH DOOR KEYBOARD INPUT
AMP
CORRECT DIGIT CORRECT SEQUENCE MEMORIES
INDIVIDUAL DOOR MEMORIES
DISABLING OF ALL DOORS EXCEPT THE ONE IN USE & ENABLING OF DOOR IN USE RELEASE WHEN CORRECT CODE IS ENTERED
OUTPUT AMP #1 DOOR
OUTPUT AMP NTH DOOR
INCORRECT CODE ENTERED ALARMS IDENTIFIES SPECIFIC DOOR
1ST DOOR RELEASE
NTH DOOR RELEASE

A combination lock system of the electronic type for doors and other applications includes digit selector switches at each door location or station and a central comparator utilizing

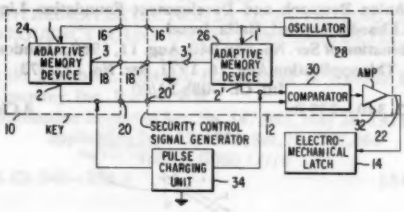
NAND gates, separate comparator units being provided for each digit. A multiple digit code is selected by simple switch means such as multiple contact thumb wheel switches and the code may be changed quickly at any time with no modification or rewiring of the circuits. The system includes a timer for resetting the entire system if the code is not entered within a preselected time and a control for resetting the system in the event that more than the number of digits in the code are entered. An alarm system is provided to indicate the selector station at which more than a predetermined excess number of digits are entered, thus indicating a possible attempt to break the code at that station. In addition the selection of a digit at any station disables all other stations and actuates indicators at all stations showing that the system is in use. A plurality of such combination systems each having its respective central comparator may be controlled by a single digit code selector or determinator so that the same code must be entered for all stations but so that the signal entry, indicator, resetting and alarm functions of each system are independent of those of the other systems.

3,754,214

ELECTRONIC SECURITY SYSTEM

Yasushi Matsumoto, Narashino, and Yoshiaki Kuwahara, Tokyo, both of Japan, assignors to RCA Corporation, New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,272
Int. Cl. G11b *9/02*
U.S. Cl. 340—149 R **21 Claims**



An electronic security system provides for the remote encoding of a lock utilizing at least two adaptive memory devices, one of which corresponds to the lock and the other to the key, the devices being each placed in a predetermined state to provide an output signal therefrom having a given level corresponding to the state of that device in response to an applied input signal. Only when the devices are in matched states will the security system provide a desired security control signal.

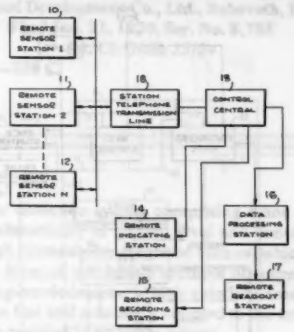
3,754,215

FREQUENCY-BURST-DURATION MODULATION AND FREQUENCY MULTIPLEXED DATA TRANSMISSION SYSTEM

Robert W. Blomenkamp, Palo Alto, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed Aug. 9, 1971, Ser. No. 169,988
Int. Cl. H04q *9/00*
U.S. Cl. 340—151 **17 Claims**

A system is disclosed for transmitting data to a control central from remote sensor stations, each station having a number of analog sensors. Once a given remote sensor station is addressed by control central emitting an unique tone, a plurality of unique tones are transmitted by the addressed station through a single channel, one tone for each sensor, each tone being transmitted for a period proportional to the amplitude of an output signal from an unique sensor. All tone generators of the addressed station are turned on simultaneously with the trailing edge of the address tone. This trailing edge also activates a pulse generator the period of which determines the time period of the full scale output of each unique sensor tone. The time period of the pulse generator may be controlled by control central issuing a synchronizing tone or independently controlled at each remote station. The output of the pulse



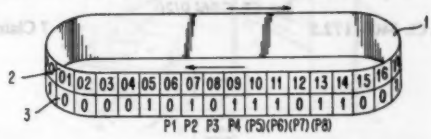
generator is integrated to produce a ramp signal. When the instantaneous value of the ramp signal equals the output signals of a given sensor, its associated tone generator is turned off.

3,754,216

POSITION INDICATING AND CONTROL SYSTEM

Dennis H. Kekas, and Lubos R. Palounek, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,449
Int. Cl. G11b *5/78, 11/00*
U.S. Cl. 340—172.5 **10 Claims**



Method and apparatus for indicating the present position of any location on a movable medium with respect to a fixed location is disclosed in which each location is arbitrarily assigned a data content of at least one bit and an address comprised of a plurality of bits made up of the data content from the location and from at least one adjacent location. Serially generated data bits are compared against desired location addresses for which position information is desired.

3,754,217

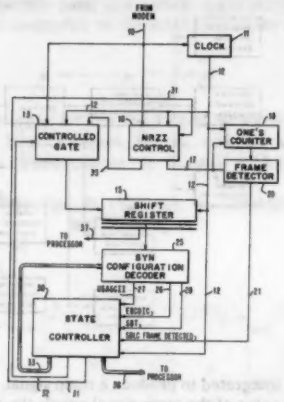
SYNCHRONOUS LINE CONTROL DISCRIMINATOR

Noel J. Bell, Durham; Ronald J. Cooper, Raleigh; Frederick P. Nagle; Frank A. Newlin, III, both of Cary, and William M. Stadler, Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,913
Int. Cl. G06f *3/00*; H03k *13/00*
U.S. Cl. 340—172.5 **4 Claims**

The described apparatus is interposed between the modem or line adapter of a synchronous transmission line and the data processor and will identify for the processor, the code in which data is being received. The discriminator is particularly useful in a system where any one of a number of data terminals using different transmission codes can be connected to one of the ports of the processor. In use, the discriminator examines, at each bit time, the last grouping of bits it has received to detect the presence of a code identifying character. When it detects one such character, the system waits until another

character is received to determine if the second character is consistent with the tentatively identified code. If not, the system resets to continue looking for a new identification



character. The system continues hunting until a transmission code is fully identified. The discriminator then notifies the processor of the code in which the data is being received.

3,754,218

DATA HANDLING SYSTEM WITH RELOCATION CAPABILITY COMPRISING OPERAND REGISTERS ADAPTED THEREFOR

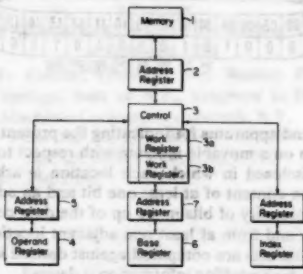
Hiroshi Hatta, and Yoshiteru Ishii, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 27, 1971, Ser. No. 147,318

Claims priority, application Japan, May 29, 1970, 45/45589

Int. Cl. G06f 9/20

U.S. Cl. 340—172.5 **7 Claims**



Each operand register for a data handling system is provided with a first area, a second area, and a third area. The first area is loaded with information for identifying whether datum with which the register is loaded is an address datum or an operand quantity other than address data. The second area may be loaded with a base register number. The third area may be loaded with an effective address, i.e., the sum of the base address and the index-modified relative address.

3,754,219

HIGH IMPEDANCE GASEOUS ION SENSING AND DETECTION SYSTEM

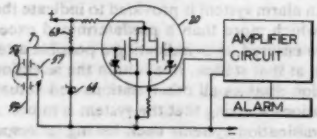
Carl F. Klein, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 3, 1972, Ser. No. 214,884

Int. Cl. G08b 21/00

U.S. Cl. 340—237 R **14 Claims**

An air pollutant or fire combustion sensing capacitor includes a sensing electrode mounted in insulated relationship within a perforated outer grounded shield which permits the free entrance of air borne ions. The sensing electrode is connected to an amplifying and alarm circuit to respond to the accumulation of either negative or positive charge on the sensing electrode. The circuit includes a thermally stabilized field effect transistor buffer amplifier having the input terminal connected to the sensing electrode and the output connected to a



high gain dual DC operational amplifier having a feedback compensation network to compensate for thermal and low frequency drift charge. A pair of transistors are connected in a differential configuration with a common input connected to the output of the operational amplifier. The alarm is connected through steering diodes to the two transistors. Either an increase or a decrease in charge thereby actuates the alarm.

3,754,220

APPARATUS FOR DETECTING URINARY BLADDER OUTFLOW

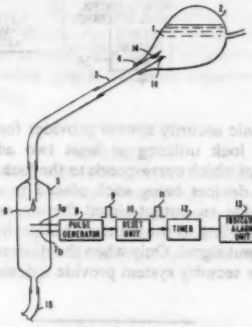
Bernard Sztamler, Naharia; Mordechai Haim Diskin, and Alexander Vilensky, both of Haifa, all of Israel, assignors to Technion Research and Development Foundation Limited and Elmedix Limited, Haifa, Israel

Continuation of Ser. No. 849,040, Aug. 11, 1969, abandoned.

This application Aug. 16, 1971, Ser. No. 172,273

Int. Cl. G08b 21/00

U.S. Cl. 340—239 R **4 Claims**



Apparatus for monitoring liquid outflow, particularly from bladders, comprising a fluid drop detector giving an output signal for each drop, reset unit with an input connected to the output of the drop detector, a presettable timer which is reset to zero when a pulse is received from the reset unit, and an indicator connected to the timer which is activated when the time between successive pulses is greater than a predetermined value.

3,754,221

GROUND FAULT DETECTOR AND METHOD OF GROUND FAULT DETECTION

Manfred Karl Georg Stelter, 3 Howard Dr., Willowdale, Ontario, Canada

Filed Apr. 19, 1971, Ser. No. 135,334

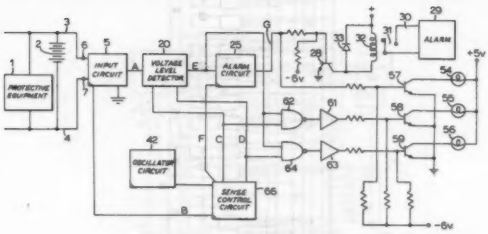
Claims priority, application Canada, Dec. 22, 1970, 101231

Int. Cl. G08b 21/00

U.S. Cl. 340—255 **12 Claims**

A ground fault detector for detecting both balanced and unbalanced faults, eg. leakages to ground or other faults in a

floating direct current system, comprises, first and second resistances connectible respectively to the positive and negative buses of the system, a two-way switching device operable to connect to the first and to the second resistances alternately, a fault condition being detected by voltage level detecting



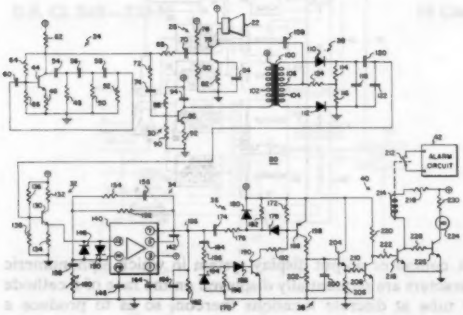
means connected between the switching device and ground, and a method of detecting ground faults in such a system by continuously alternately checking positive and negative sides of such system against predetermined known reference resistances.

3,754,222

INTRUSION DETECTION DEVICE UTILIZING LOW FREQUENCY SOUND WAVES AND PHASE DETECTION TECHNIQUES

Harold Eisenberg, Chicago, Ill., assignor to Webster Electric Company, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 147,985, May 28, 1971. This application Dec. 13, 1971, Ser. No. 207,466
Int. Cl. G08b *13/16*
U.S. Cl. 340—258 A **13 Claims**



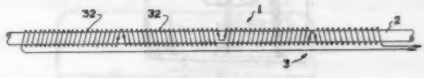
A signal in the low audio frequency range and preferably of about 400 to 600 hertz is radiated into one or more protected areas by one or more speakers, and each speaker also acts as a transducer of reflected audio energy. A substantially amplitude independent phase sensitive detector designed to operate at the audio frequency is coupled to the source of audio signals and to each speaker to produce an output signal when a reflected signal exhibits phase shift due to even relatively slight movements of an intruder in any direction in the protected area. A low band pass circuit couples a narrow low frequency band of signals from the detector to gating and integrating circuits to provide an alarm indication in response to phase changes characteristic of the intruder movement to be detected.

3,754,223

INTRUDER DETECTION SYSTEM

Shmuel Shtrikman, Rehovoth, Israel, assignor to Yeda Research and Development Co., Ltd., Rehovoth, Israel

Filed Jan. 21, 1970, Ser. No. 8,755
Int. Cl. G08b *13/24*
U.S. Cl. 340—258 C **5 Claims**



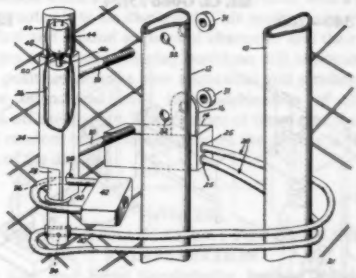
An intruder detection system comprising a line adapted to be located substantially at ground level and consisting of an elongated high permeability magnetic core on which is wound a coil in the form of successive sections of respectively opposite winding handednesses, a high gain low noise amplifier coupled to the line and a detector coupled to the amplifier and adapted to be coupled to an alarm system.

3,754,224

SECURITY ALARM ACTUATING DEVICE

Wilbo R. Roy, 7031 Cross Ln., Fort Wayne, Ind., and Stanley P. Pasavage, 806 Three Rivers E., Fort Wayne, Ind.

Filed July 14, 1972, Ser. No. 271,899
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **7 Claims**



The invention is a security device for sensing the unauthorized opening of a gate or the like, the device including an electrical series loop incorporated into a mechanical structure mounted directly on relatively movable members of the gate. Fixedly mounted on one of the gate members is a frame which carries a normally open electrical switch. A rod for operating the switch is removably mounted in the frame in such a position as to engage and hold the switch closed. A lock removably secures the rod to the frame in this switch-closing position. An electrical terminal block is secured to the same gate member and has mechanically and electrically connected thereto the opposite ends of a flexible electrical cable. The cable is mechanically secured between its ends to the rod and is passed around the other gate member so as to prevent more than a predetermined degree of relative movement of said members. The switch and the cable are electrically connected in series such that severing of the cable or opening of the switch by removal of the lock and rod from the frame will result in an open circuit which may be utilized for setting off an alarm.

3,754,225

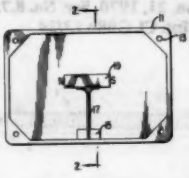
PORTABLE EQUIPMENT SECURITY SYSTEM

Donald Hastings Gleason, Arlington, Va., assignor to Reaction Instruments Incorporated, Vienna, Va.

Filed June 3, 1971, Ser. No. 149,562
Int. Cl. G08b *13/22*
U.S. Cl. 340—280 **7 Claims**

A portable security equipment system having a magnet means mounted on the equipment to be monitored. The mag-

netic means is supported by means such as a spring so as to vibrate or oscillate at a substantially fixed frequency in response to acceleration caused by movement of the equipment. A magnetometer is located so as to detect the modulation of the magnetic field caused by the vibration of the magnet.



3,754,226

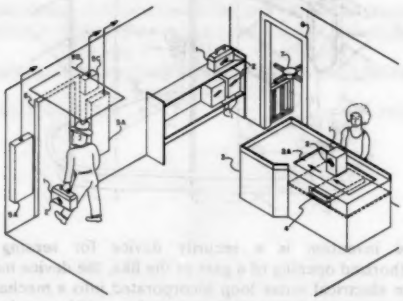
CONDUCTIVE-RING FERROMAGNETIC MARKER AND METHOD AND SYSTEM FOR USING SAME

Edward R. Fearon, Tulsa, Okla., assignor to Stoplifter International Inc., Dallas, Tex.

Division of Ser. No. 747,050, March 22, 1968, Pat. No. 3,631,442, which is a continuation-in-part of Ser. No. 680,666, Nov. 6, 1967, abandoned. This application Nov. 24, 1971, Ser. No. 201,858

Int. Cl. G08b *13/24*

U.S. Cl. 340—280 13 Claims



A ferromagnetic marker is used in tagging objects to allow selective detection of the tagged objects within an interrogation zone having a magnetic field varying at a fundamental frequency. The marker comprises a ring-shaped electrical conductor for carrying a current induced by the varying magnetic field. An element which is non-linearly polarized in response to an electromagnetic field is disposed proximate the conductor to modulate the current flowing therethrough. A modulated electromagnetic signal is then generated and sensed to allow detection of a tagged object.

3,754,227

HOTEL SIGNALLING SYSTEM

Sven Gote Andersson, Syrsastigen 14, 61100 Nykoping, Sweden

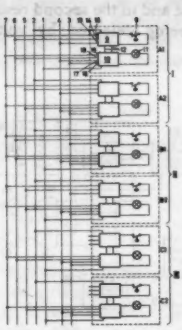
Filed Dec. 27, 1971, Ser. No. 211,881

Claims priority, application Switzerland, Jan. 11, 1971, 344/71

Int. Cl. G08b *5/00*

U.S. Cl. 340—286 R 10 Claims

A system of multiple apparatuses for a signalling- and indicating function of a hotel, each apparatus embodying a transmitter possessing an indicator key, a receiver possessing a signal lamp and connection terminals for the infeed of power. According to important aspects of this invention, the transmitter possesses a coding mechanism controllable by the indicator key for simultaneously producing a control signal and at least two address signals, and wherein the receiver possesses a decoding mechanism for actuating a storage. At the output of the receiver there is connected the signal lamp.



3,754,228

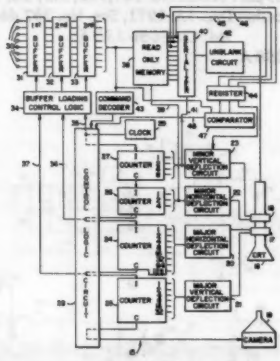
COMPUTER OUTPUT DISPLAY SYSTEM

Richard A. Hwang, San Carlos; Rolf D. Kahle, Saratoga; Arthur H. Roshon, San Jose, and Paul N. Seitz, Milpitas, all of Calif., assignors to Quantor Corporation, Cupertino, Calif.

Filed Aug. 27, 1970, Ser. No. 67,446

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD 8 Claims

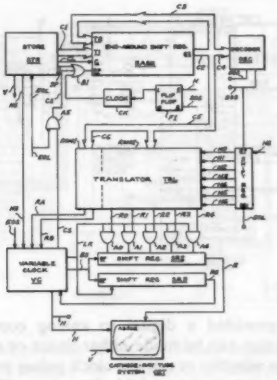


A computer output display system in which alphanumeric characters are sequentially displayed on the face of a cathode ray tube at discrete locations thereon, so as to produce a printed page-type composition which may be photographed to produce a permanent record of the computer output data. Such a computer output display system comprises a cathode ray tube having two deflection systems, the first, or major deflection system, for deflecting the beam to a particular area of the face of the cathode ray tube, and the second, or minor deflection system, for scanning that particular area in a stepwise manner, the beam of the cathode ray tube being synchronously intensity modulated to produce the image of the desired alphanumeric character. In addition, a multicharacter buffer capable of temporarily storing a sufficient number of characters to allow time for the cathode ray tube beam to be translated across the face of the cathode ray tube, from one end to the other, as would occur at the end of a line, may be provided to permit operation with computer output data that is not line-formated.

3,754,229
PROPORTIONAL SYMBOL DISPLAY

Solomon Manber, Sands Point, N.Y., assignor to Redactron Corporation, Hauppauge, N.Y.

Filed June 29, 1972, Ser. No. 267,641
Int. Cl. G06f 3/14
U.S. Cl. 340—324 AD 11 Claims

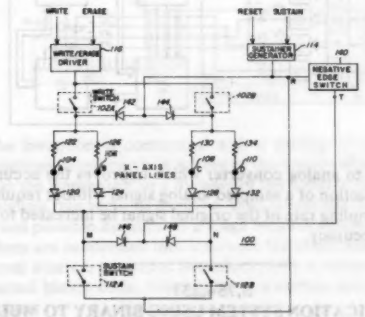


A display system wherein intensity modulated dot signals are used to generate visually displayed symbols or matrices of dots on a medium. Proportional spacing of the symbols is obtained by controllably varying the speed at which the dot signals are generated during uniform scans of the medium.

3,754,230
PLASMA DISPLAY SYSTEM

Ernest P. Auger, Billerica, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 21, 1970, Ser. No. 99,798
Int. Cl. G08b 5/36
U.S. Cl. 340—324 M 18 Claims

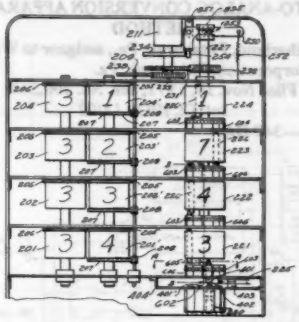


Visual display systems such as plasma displays in which a diode and resistor matrix provides writing, erasing and sustaining voltages to a plurality of elemental areas to produce visual indications without interference between the various supplied voltages, whether dc, ac or pulse for coupling control signals and logic to a large number of elements with a reduction in the required number of switches and circuit connections is described.

3,754,231
COMBINED SEQUENTIAL AND SELECTIVE DATA DISPLAY

Frederick W. Pfleger, 1152 Barbara Dr., and John Billis, 14 Galway Ln., both of Cherry Hill, N.J.

Filed July 29, 1971, Ser. No. 167,107
Int. Cl. G09f 11/02
U.S. Cl. 340—325 7 Claims

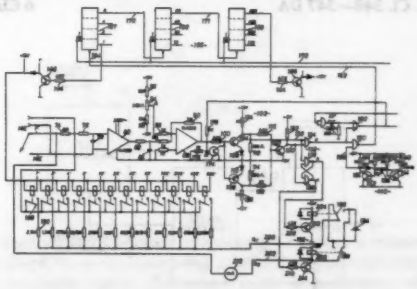


A display system comprising a series of sequential characters in which each sequential character is initially displayed in conjunction with a random character. This sequential character and this random character moves to a second display position when a new sequential character with a new random character is to be displayed. This moving or progression of the first and second sequential character and their random characters to the next display positions will continue to successive positions when a new sequential and random characters are introduced until the combination of characters progress off the display. The number of times that the sequential and random characters appear on the display is limited by the size of the display.

3,754,232
CIRCUIT ARRANGEMENT FOR BASELINE COMPENSATION

Jurgen Gut, and Ernst Spreitzhofer, both of Nubdorf, Germany, assignors to Bodenseewerk Perkin-Elmer & Co. GmbH, Uberlingen, Bodensee, Germany

Continuation of Ser. No. 882,117, Dec. 4, 1969. This application Dec. 21, 1971, Ser. No. 210,563
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 1 Claim



An electronic counter operates as an integrating element and storage cell. Means are provided for applying a pulse sequence to the counter during the occurence of a residual or baseline signal prior to or between the peaks and a digital-to-analog converter circuit is coupled to and controlled by individual counter stages of the counter for generating analog signals in correspondence with the states and weights of the

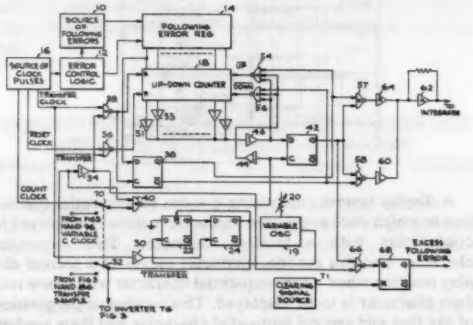
counter stages for forming the said correction signal. The circuit arrangement according to the present invention, on the one hand offers the advantages of the "digital" zero line compensation with respect to accuracy and storage capacity while on the other hand avoids the use of moving parts as the stepping motor.

3,754,233

DIGITAL-TO-ANALOG CONVERSION APPARATUS AND METHOD

James F. Sutherland, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 19, 1971, Ser. No. 200,367
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **10 Claims**



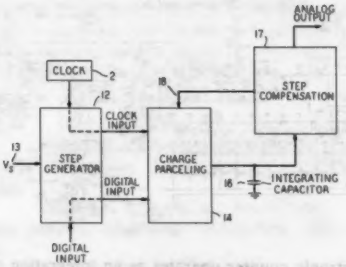
An indirect digital-to-analog conversion apparatus and method which combines the advantages of pulse rate modulation with pulse width or pulse duration modulation. Pulse duration modulation is used on the least significant bits; while pulse rate modulation is used on the more significant bits up to the most significant bit. In this manner, the advantages of both systems are combined resulting in a system in which conversion time is minimized while the ripple content in the analog output is also minimized.

3,754,234

CHARGE PARCELLING INTEGRATOR

Rein R. Laane, Wheaton, Ill., and Bernard T. Murphy, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 884,058, Dec. 11, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,400
Int. Cl. H03k *13/22, 13/25;* H04b *1/00*
U.S. Cl. 340—347 DA **6 Claims**



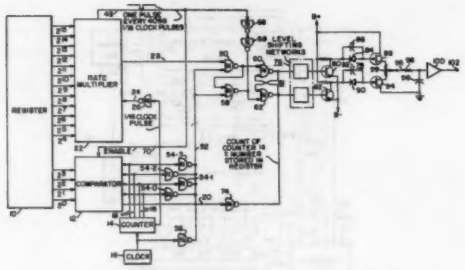
An integrator network for use in signal conversion systems uses charge parcelling techniques to transmit pulses to the integrating capacitor as quanta of charge. A compensation network corrects imbalances between the input pulses.

3,754,235

DIGITAL TO ANALOG CONVERTER

Ernst Dummermuth, East Cleveland, and Ronnie G. Walters, Highland Heights, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Mar. 1, 1971, Ser. No. 119,586
Int. Cl. G05b *19/30;* H03k *13/02*
U.S. Cl. 340—347 DA **9 Claims**



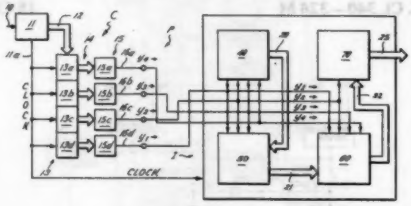
There is provided a digital to analog converter whose transfer function can be made either linear or non-linear depending upon whether or not the clock pulses provided therefore have a constant or a variable frequency. This provides a means for implementing a quadratic gain characteristic so that when used with a positioning servo the performance thereof is greatly enhanced.

3,754,236

DIGITAL TO ANALOG CONVERSION APPARATUS

William P. Dotson, Jr., Dickinson, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 13, 1971, Ser. No. 188,927
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **2 Claims**



A digital to analog converter which improves the accuracy of reconstruction of a sampled analog signal without requiring that the sampling rate of the original signal be increased to obtain such accuracy.

3,754,237

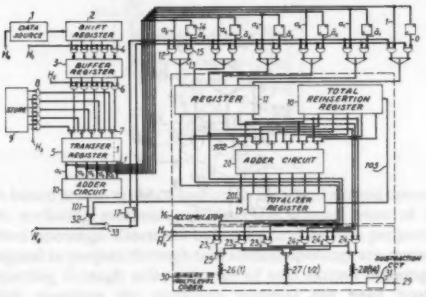
COMMUNICATION SYSTEM USING BINARY TO MULTI-LEVEL AND MULTI-LEVEL TO BINARY CODED PULSE CONVERSION

Patrick de Laage de Meux, Saint-Germain-En-Laye, France, assignor to Lignes Telegraphiques et Telephoniques, Paris, France

Filed Mar. 2, 1972, Ser. No. 231,306
Claims priority, application France, Mar. 5, 1971, 7107806
Int. Cl. H03k *13/24*
U.S. Cl. 340—347 DD **4 Claims**

A communication system in which binary coded pulses are translated into multi-level pulses before being transmitted

through a communication circuit, at the receiving end of which they are reconverted into binary coded pulses. The binary pulses are grouped into words of n bits, to each of which a $(n+1)$th-bit of constant value is added. The $(n+1)$ bit words are subdivided into k partial words each having q bits, with $(n+1)$ equal to the product kq. Each one of the partial words is translated into a multi-level pulse of one or the other polarity according to the algebraic sign of the sum of the positive



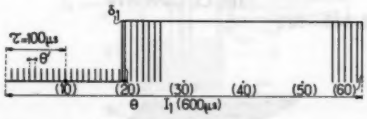
and negative amplitudes of the previously transmitted multi-level pulses. A method for the insertion of synchronization words is described. At the receiving end of the system, the $(n+1)$th-bit in each group of k partial words is used for controlling the correct restitution of the original binary coded word, by eliminating the ambiguity which otherwise could result from the fact that different multi-level pulses may correspond to identical binary coded partial words, according to their position in the sequence of these words.

3,754,238

METHOD AND DEVICE FOR TRANSMITTING BIVALENT SIGNALS

Jacques Oswald, 1 rue Salomon de Brosse, 78 Versailles, France

Filed Apr. 2, 1970, Ser. No. 25,120
Claims priority, application France, Apr. 2, 1969, 6910102
Int. Cl. H03k *13/00, 13/24*; H04l *3/00*
U.S. Cl. 340—347 DD **16 Claims**



The invention is concerned with a coding of telegraphic transistions based on the marking of the instant of a transition within the framework of a division of the definite sequence of the signals into sections having a fixed length shorter than the shortest possible duration of a stage without transition. These sections are subdivided into intervals; the order number of an interval where a transition has taken place is transmitted into reflected binary code, which assures a certain number of advantages.

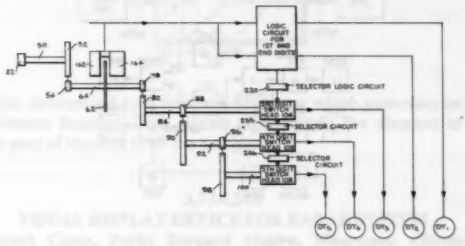
3,754,239

HYBRID ANALOG-TO-DIGITAL CONVERTER

John Henry Hosemann, Cheyenne, Wyo., assignor to Ideal Aerosmith, Inc., Cheyenne, Wyo.

Filed Oct. 18, 1971, Ser. No. 190,137
Int. Cl. G08c *9/08*
U.S. Cl. 340—347 P **9 Claims**

An analog-to-digital converter or encoder utilizes a combination of a standard photoelectric encoder and improved low-friction long-lasting brush-type encoder which together with the necessary code conversion circuitry will produce an absolute unambiguous decimal digital readout and a visual display of the readout all contained in a single compact housing which can be mounted in direct association to the object being measured. The encoder circuit also has an internal clutch arrangement whereby the encoder systems can be selectively disconnected from the input to allow the encoder to remain at



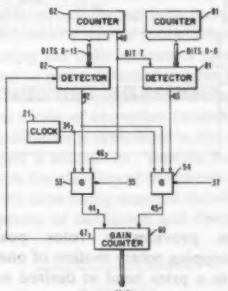
zero or some other reference point while the relative positions of the encoder and the object whose position is being measured are changed. The unambiguous output is generated by sensing the position of the first order, or least significant readout digit and utilizing the position to selectively control energization of a preselected one of a pair of sensors associated with the next higher order digit both in the same encoder system and between the systems.

3,754,240

GAIN DECISION LOGIC FOR INTEGRATING ANALOG-TO-DIGITAL CONVERTERS

James E. Milton, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1971, Ser. No. 190,501
Int. Cl. H03k *13/10*
U.S. Cl. 340—347 NT **6 Claims**



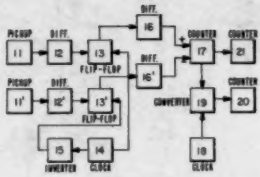
Unknown analog signals are coupled through a selectable gain amplifier to an integrating analog-to-digital converter. A first analog-to-digital conversion cycle is performed which sequentially increments counters associated with the converter circuit while the amplifier gain is held at a preselected level. Logic circuitry responds to certain counts in those counters to select an optimum amplifier gain setting to be used during a second conversion cycle. The cycle amplifier gain setting and conversion result are accurately correlated to the amplitude of the unknown analog input. Identity between the gain decision and the first conversion cycle gain setting can be detected to bypass the second conversion cycle.

3,754,241

APPARATUS FOR MEASURING PHASE DIFFERENCE

Osamu Maehara, Kawasaki, Japan, assignor to Ona Sokki Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1971, Ser. No. 192,200
Claims priority, application Japan, Oct. 27, 1970, 45/93977
Int. Cl. G01r 25/00; H03r 13/02
U.S. Cl. 340—347 SY 7 Claims



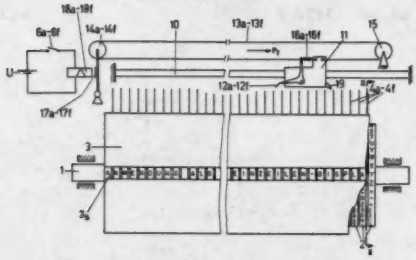
Apparatus for measuring phase differences of a rotating shaft by detecting a pair of generated AC frequencies adjacent the periphery of a tooth-wheel rotating at a fixed speed, even though the phase difference of the AC signals is greater or smaller that 2 π.

3,754,242

ROTOR POSITION SELECTION MECHANISM

Kurt Ehrat, Zurich, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 19, 1970, Ser. No. 81,778
Claims priority, application Switzerland, Oct. 23, 1969, 15829/69
Int. Cl. G08b 5/00
U.S. Cl. 340—373 R 12 Claims



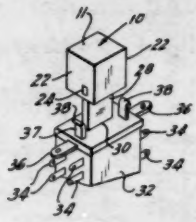
The invention provides a rotor position selection mechanism for stopping rotary motion of one or more rotors or print wheels in a print head at desired angular positions each corresponding to a character on the rotor which is required to be printed. The rotor has a group of recesses positioned on a reference grid and located on the rotor so that as the rotor revolves,each group of recesses passes a set of feelers whose positions can be selected to correspond to any one of the patterns of recesses. In operation the positions of the feelers are set to represent a selected code word corresponding to one of the characters in the print wheel and a catch operated by all the set feelers sensing all the recesses on the rotor corresponding to the selected code word moves into a hole in the rotor to arrest its motion. Several rotors or print wheels may be provided, each with an associated group of feelers and a common setting mechanism may be used to set each group of feelers to a different selected code word so that a line of print may be formed by the print wheels being arrested at positions corresponding to the selected code words.

3,754,243

CONTROL DEVICE WITH SELF-CONTAINED VISUAL INDICATION MEANS

Fumitaka Kaneko, and Shinzo Suzuki, both of Tokyo, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1971, Ser. No. 138,487
Claims priority, application Japan, July 23, 1970, 45/73809
Int. Cl. G08b 5/00; H02b 1/02
U.S. Cl. 340—378 R 6 Claims



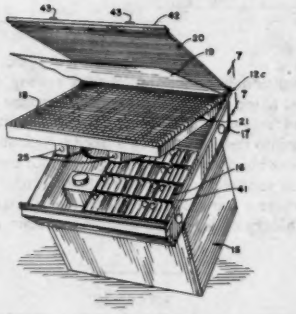
A control member made of a light transmittable material selectively effects electrical connection between a power supply and a controlled device. The control member is provided with a self-contained visual indication means, preferably an electric light bulb, embedded therein. Appropriate electrical leads extend from the light bulb and are electrically connected to suitable contacts on the outer surface of the control member. The electrical switch or other device actuated by the control member is provided with suitable contacts operatively connected to a suitable power supply and adapted when the control member is in the "on" position to engage the contacts on the surface of said control member, thereby to provide power to the light bulb and thus to provide a visual indication of the status of the control member.

3,754,244

GRAPHIC DISPLAY ASSEMBLY

Roscoe H. Garrett, Deerfield, Ill., assignor to The Riley Company, Skokie, Ill.

Continuation of Ser. No. 701,179, Jan. 29, 1968, abandoned.
This application Oct. 1, 1970, Ser. No. 77,307
Int. Cl. G09f 9/14
U.S. Cl. 340—381 1 Claim



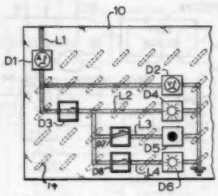
A graphic display assembly is provided for use with a known type of industrial process annunciator system. The graphic display annunciator provides for indication of abnormal process functions on a process diagram representing the process and for indication of points in the process where the condition is abnormal. Thus there is provided a clear and compact visual presentation of the condition of the process.

3,754,245

SYSTEM INDICATOR BOARD

Henry Otto Peprnik, Downsview, Ontario, Canada, assignor to Ferranti-Packard Limited, Toronto, Canada

Filed Dec. 27, 1971, Ser. No. 211,909
Int. Cl. G09f 9/14
U.S. Cl. 340—381 3 Claims



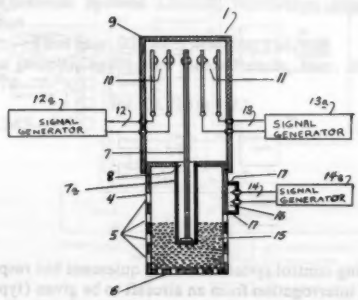
A board has an array of uniformly arranged slotted openings with surfacing material covering the unused ones of said slotted openings. Electrical indicator devices with projections designed to project through said slotted openings are mounted projecting through selected ones of said slotted openings at which openings the surfacing material has been broken. Means are provided for fastening the device in place. The electrical devices have been designed to represent the state of components or conditions of a system which are to be dynamically represented.

3,754,246

APPARATUS FOR DETECTING SNOW, WATER OR HEAT

Einar L. Borufsen, Nordveien 14, 1342 Tar, Norway

Filed July 9, 1971, Ser. No. 161,091
Int. Cl. G08b 19/00
U.S. Cl. 340—420 2 Claims



An indicator for detection of snow, water or extreme heat comprising a bimetallic thermostat element arranged in a receptacle to close a first relay when the receptacle is in snow or a second relay when the receptacle is exposed to intense heat, the relays being connected to first and second signal generators, respectively, that are activated when their respective relays are closed to transmit a characteristic radio signal. A third signal generator is activated when a chamber on the receptacle is flooded with water.

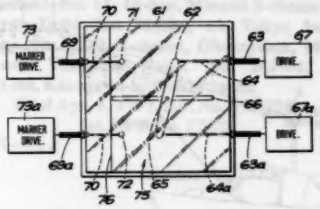
3,754,247

BERTHING DISPLAY APPARATUS

Reginald Frederick Hansford, London, England, assignor to Decca Limited, London, England

Filed Apr. 1, 1971, Ser. No. 130,282
Int. Cl. G01s 7/04
U.S. Cl. 343—5 R 7 Claims

A display apparatus which produces a display of a ship, a line representing an intended berth and indicators whose separation from the berth marker line represents the deviation of the closing rate of an associated part of the ship from a value determined by a function generator which generates an optimum function from signals representing the distance of the part of the ship from the berth.

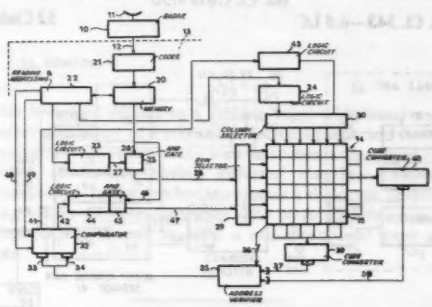


3,754,248

VISUAL DISPLAY DEVICE FOR RADAR SYSTEM

Robert Casse, Paris; Bernard Maitre, Maurepas; Claude Thomine-Desmazures, Saint-Cloud, and Gerard Thouvenel, Croissy-sur-Seine, all of France, assignors to Electronique Marcel Dassault, Paris, France

Filed Mar. 17, 1971, Ser. No. 125,113
Int. Cl. G01s 7/04
U.S. Cl. 343—5 R 9 Claims



A visual display device for radar systems comprises a panel including a plurality of juxtaposed light indicators, each such indicator being formed by one or more lamps, and means for selectively operating the light indicators as a function of the position(s) of one or more detected targets in the area being scanned by the radar. The display device has two modes of operation : a first mode of operation (watch mode) in which the plurality of indicators is associated to the whole of the area being scanned and a second or "precise locating mode" of operation in which the plurality of indicators is associated to a portion only of the area being scanned thereby taking full advantage of the power of resolution and discrimination of the radar system.

3,754,249

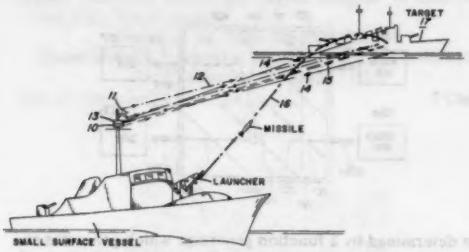
LASER FIRE CONTROL SYSTEM SMALL BOAT APPLICATION

Stuart D. Kearney, II, Severna Park, Md., assignor to the United States of America as represented by the Secretary of the Navy

Filed July 28, 1969, Ser. No. 846,313
Int. Cl. G01s 9/02; F41g 7/00
U.S. Cl. 343—6 R 4 Claims

A small boat surface to surface weapon control system comprising search radar, TV camera, laser transmitter and a semi-active guided missile is disclosed. The target is initially located by radar scanning devices and the bearing is transferred to a television camera mechanism which is mounted on the same mast as the radar antenna. The television camera and a laser

gun will then be pointed in the direction of the target. A blossom on a television screen which coincides with the image of



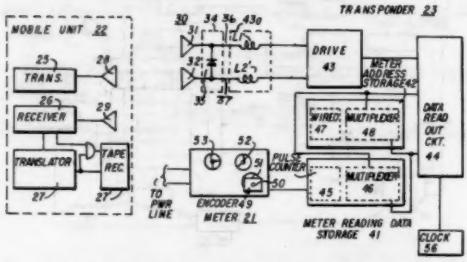
the target indicates that the laser gun is on line with the target. The missile is fired and rides a reflected laser beam to the target.

3,754,250

REMOTE METER READING SYSTEM EMPLOYING SEMIPASSIVE TRANSPONDERS

James N. Bruner, Springfield, Ill., assignor to Sangamo Electric Company, Springfield, Ill.

Filed July 10, 1970, Ser. No. 53,745
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 LC 52 Claims



A remote meter reading system having a transponder for each meter or group of meters to be read including an antenna having a receive section for receiving interrogate signals transmitted from a mobile interrogating unit, and a transmit section for reradiating modulated interrogate signals back to the mobile unit; a non-linear impedance network connected between the transmit section and the receive section of the antenna controllable to modulate the meter interrogate signals, and meter data storage apparatus for providing data signals representing a meter reading and meter identification to modify the impedance of the non-linear impedance device and thereby effect modulation of the interrogate signals. The modulated interrogate signals are reradiated by the transmit section of the antenna to convey the meter reading and identification to the mobile unit.

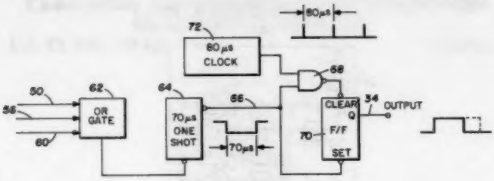
3,754,251

ANTI-SYNCHRONOUS REPLY CIRCUIT

Dean S. Thornberg, and Allen C. Capes, both of Salt Lake City, Utah, assignors to LTV Electrosystems, Inc., Greenville, Tex.

Filed Jan. 17, 1972, Ser. No. 218,164
Int. Cl. G01s 9/56
U.S. Cl. 343—6.8 LC 11 Claims

In radio navigation systems located in areas that are rich with interrogation reflections a variable dead time provides smearing of replies during the interrogation time window generated by the interrogation reflections. A radio navigation system of the type described receives a pair of interrogation pulses which are decoded into a single pulse for operation of a reply transmitter. The interrogation pulse receiver decodes the interrogation pulses only during the active time span thereof and when received interrogation pulses are spaced over the required time span. The transmitter generates position determining signals in response to the decoded interrogation pulses. To block-out or smear the position determining signals emitting from the transmitter generated by interrogation pulse reflections, a variable width blanking pulse is generated for deactivating the interrogation pulse receiver. This variable width blanking pulse is generated in an anti-synchronous circuit responsive to the decoded interrogation pulses and timed clock pulses.

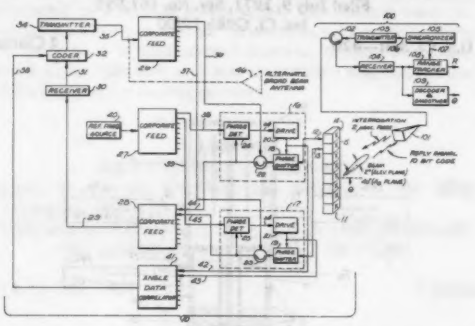


3,754,252

ADAPTIVE ARRAY RETRODIRECTIVE LANDING CONTROL RESPONSER

Lon L. Sanders, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 6, 1971, Ser. No. 186,898
Int. Cl. G01s 9/56, 9/02; H04b 7/00
U.S. Cl. 343—6.5 10 Claims



A landing control system normally quiescent but responsive to pulsed interrogation from an aircraft to be given (typically) elevation and azimuth angle information for landing approach. The ground responser equipment determines the angle of arrival of the interrogation pulses through an adaptive phased array arrangement and retransmits that information as a coded reply. Range information is air derived through the measurement of time delay in receiving the coded responser reply corresponding to each interrogation.

3,754,253

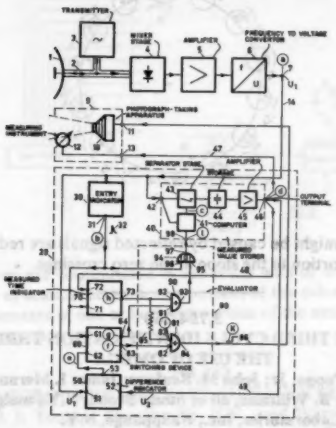
APPARATUS AND PROCESS FOR TRIGGERING THE CAMERA OF A DOPPLER SPEED-MEASURING APPARATUS

Rudolf Balsiger, Neuenhof, Switzerland, assignor to Zellweger, Ltd., Uster, Switzerland

Filed Feb. 24, 1969, Ser. No. 801,356
Claims priority, application Switzerland, Feb. 15, 1968, 2266/68
Int. Cl. G01s 9/44
U.S. Cl. 343—7 ED 14 Claims

The triggering of the camera depends on the chronological behavior of the Doppler frequency. The difference indicator

supplies a signal from a comparison of the measured Doppler voltage value with a stored value and the measured time indicator measures the time it takes a vehicle to cover a fixed



distance and produces a responsive signal. The evaluator produces a signal from these latter signals to either block triggering of the camera or actuate triggering after a set time delay.

3,754,254

TARGET DETECTION BY DOPPLER SHIFT

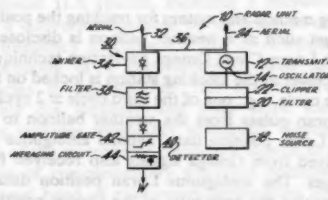
Michael Jinman, Edinburgh, Scotland, assignor to Microwave and Electronic Systems Limited, Newbridge, Midlothian, Scotland

Filed Mar. 22, 1971, Ser. No. 126,744

Claims priority, application Great Britain, Mar. 20, 1970, 13,531/70

Int. Cl. G01s *9/42*

U.S. Cl. 343—7.7 **13 Claims**



Detection of moving targets by detection of the doppler shift of radiation scattered or reflected by the target when illuminated by such radiation, is liable to give a false target indication if an interfering signal is received which has a frequency difference from the transmitted radiation lying in the range of the expected doppler shift. The problem is found in intruder alarm systems which use doppler shift detection. To mitigate the problem, the transmitted radiation is frequency modulated, by noise or by an audio tone, so that the scattered or reflected radiation has a coherence with the transmitted radiation but the interfering signal does not. The principle is applicable to both electromagnetic and pressure-wave radiation. In one intruder alarm system two separately operating, doppler shift detector units are coupled together to give a warning signal only when both indicate an intruder. Application of the above principle to one or both units prevents them giving false alarms due to mutual interference.

3,754,255

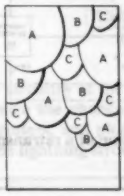
WIDE BAND FLEXIBLE WAVE ABSORBER

Kunihiro Suetake, No. 11, 10-ban, Minami 3-chome, Meguro-ku, Tokyo; Toshimitsu Musha, c/o Tokyo Institute of Technology, No. 12-1, 2-chome, Ohokayama, Meguro-ku, Tokyo, and Yoshiyuki Naito, No. 261-44, Suenaga, Kawasaki-shi, Kanagawa-ken, all of Japan

Filed Apr. 5, 1971, Ser. No. 130,937

Int. Cl. H01q *17/00*

U.S. Cl. 343—18 A **13 Claims**



This invention relates to a flexible super-wide band wave absorber composed of a mixture of ferromagnetic and dielectric materials. One form of the wave absorber is composed of a plurality of ferrites having different magnetic resonant frequencies. A further embodiment uses a dielectric material having a high dielectric constant. The wave absorber can be semispherically shaped to form a non-directional wave absorber.

3,754,256

JAMMING ELECTRONIC WAVE-FORM INFORMATION DEVICES

William A. Nystrom, St. Marys, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

Filed Aug. 9, 1968, Ser. No. 751,384

Int. Cl. G01s *7/42, 9/02*

U.S. Cl. 343—18 E **10 Claims**

Radar and other electronic devices which rely for information upon reflection of a primary wave-form signal are jammed by interposing in the path of the primary signal chaff of compacted vermiform, or expanded, graphite. The primary signal may be electromagnetic, as in the case of radar, or it may be sonic, as in the case of sonar.

3,754,257

BI-STATIC CIRCULARLY SYMMETRIC RETRODIRECTIVE ANTENNA

H. Paris Coleman, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

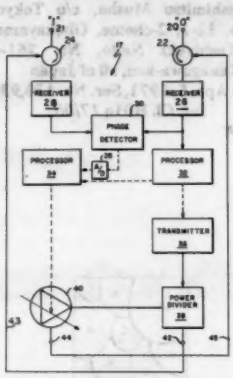
Filed Feb. 25, 1972, Ser. No. 229,368

Int. Cl. H01q *15/14*

U.S. Cl. 343—100 TD **5 Claims**

A circularly symmetric antenna system capable of providing retro-directive retransmission of a modulated or an encoded incident signal, or having the ability of being employed as a bi-

static relay where retransmission may be directed from the initiating station. Also the system may be used to provide selective automatic suppression of a retransmission in an unwanted direction.

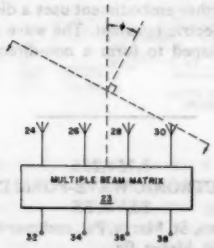


3,754,258

LINEAR OR PLANAR RETRODIRECTIVE ANTENNA SYSTEM

H. Paris Coleman, Alexandria, Va., assignor to the United States of America as represented by the Secretary of the Navy

Filed Feb. 25, 1972, Ser. No. 229,369
Int. Cl. H01q *15/14*
U.S. Cl. 343—100 TD **6 Claims**



A method and apparatus for obtaining automatic retrodirective performance from a linear or planar electromagnetic antenna array. The system may be employed in an active or passive manner and accomplishes selective retrodirectivity by the manipulation of the beam terminals on a multiple beam matrix. Also, control of the reradiated beam pattern is possible. Furthermore, this retrodirective system can also identify the angle of incidence of any particular transmission, and may therefore be employed as direction finding equipment.

3,754,259

OMNIRANGE NAVIGATION APPARATUS AND METHOD

Robert W. Redlich, 9 Grand Park Blvd., Athens, Ohio

Filed July 22, 1970, Ser. No. 57,097
Int. Cl. G01s *1/04*
U.S. Cl. 343—102 **11 Claims**

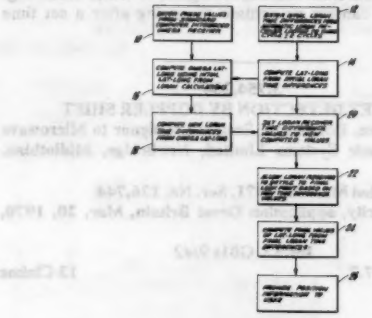
An amnirange navigation apparatus and method wherein a reference signal is radiated and a ring antenna array radiates a variable phase signal which rotates bodily at a first frequency without physically rotating the array and which has sharp zero crossings. The measured phase between the received reference and variable signals is equal to the bearing between the transmitter and receiver. The receiver uses zero crossing techniques for phase measurement so that possible bearing errors which might be caused by reflected signals are reduced in direct proportion to the slope at the zero crossings.

3,754,260

LORAN-C THIRD CYCLE IDENTIFICATION THROUGH THE USE OF OMEGA

Martin C. Poppe, Jr; John M. Beukers; James I. Meranda, and Christian B. Williams, all of Stony Brook, N.Y., assignors to Beukers Laboratories, Inc., Hauppauge, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,016
Int. Cl. G01s *1/24, 1/30*
U.S. Cl. 343—103 R **11 Claims**



A tracking method and system for tracking the position of a remote target such as a weather balloon is disclosed which utilizes both Loran-C and Omega navigation techniques. The Loran-C receiver at the tracking station is locked on to an indeterminate cycle, e.g., one of the third cycle ± 2 cycle, of the received Loran pulses from the weather balloon to provide ambiguous Loran position data. Second ambiguous position data is derived from Omega signals also received from the remote target. The ambiguous Loran position data is employed to resolve the ambiguity of the Omega position data, after which the resolved Omega position data is employed to obtain precise Loran position data from the ambiguous Loran position data. The Loran receiver is then set to lock on to the proper cycle corresponding to the corrected Loran position data.

3,754,261

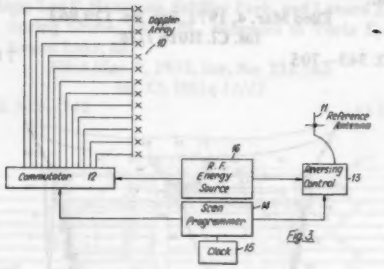
RADIO NAVIGATION BEACON

Charles W. Earp, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,403
Int. Cl. G01s *1/38*
U.S. Cl. 343—106 D **10 Claims**

A method and apparatus for improved signal amplitude tapering in a Doppler Navigation system having a multi-element linear array which is R.F. excited element-by-element through a commutator to produce a Doppler signal at a

remote receiving point. A reference antenna is also provided to radiate a signal against which received DOppler signals can be interpreted at the remote point, in terms of angle with respect to a predetermined navigational path. The elements of



the array are commutated in sub-scans with or without alternation of scan direction and a portion of the sub-scans omit a few elements at one or both extremities of the array for tapering purposes.

3,754,262

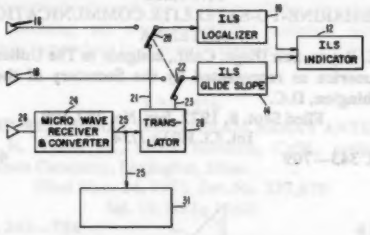
MICROWAVE AIRCRAFT GUIDANCE SYSTEM

Donald J. Toman, Pleasantville, N.Y., and Warren Hundley, Upper Saddle River, N.J., assignors to Tull Aviation Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 54,456, July 13, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 247,188

Int. Cl. G01s *1/14*

U.S. Cl. 343—108 R **20 Claims**



A microwave ILS system which is compatible with a conventional ILS system, including a microwave receiver having a converter operable by subtraction of a predetermined frequency to convert a pair of complementary sub-band portions of a predetermined band of microwave frequencies to conventional ILS system frequencies respectively for localizer and glide slope functions. The receiver includes means for selectively changing the conversion of the microwave frequency signals to select different pairs of complementary sub-band portions of the predetermined band of microwave frequencies for conversion to the conventional localizer and glide slope function frequencies.

3,754,263

LIGHTNING TRACKING SYSTEM

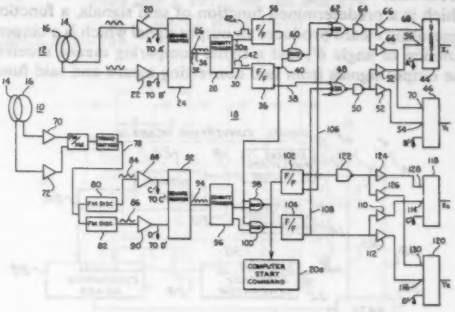
Ronald J. Wojtasinski, Cocoa Beach, and James H. Jones, Titusville, both of Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 28, 1972, Ser. No. 221,714

Int. Cl. G01s *3/02*

U.S. Cl. 343—112 R **5 Claims**

A system for locating lightning strikes by developing the coordinates of a pair of lines, each of which is produced at a reference sensing station. At each station there are a pair of directional antennas which produce analog signals responsive to a lightning stroke. These analog signals are fed to a pair of integrators which integrate the signals for a predetermined period of time so as to produce the X and Y co-ordinate of a particular line. The analog signals are also fed through a square rooter, a Schmitt trigger circuit, and flip-flops to produce pulses for starting and stopping the integrators. The system at the remote station is similar to that at the central station and is tied to the circuitry at the central station through logic circuits to minimize the chance of error from spurious signals. Computers, printers, and plotters are utilized to plot the exact location of the lightning stroke.



3,754,264

RADIO DIRECTION FINDING APPARATUS

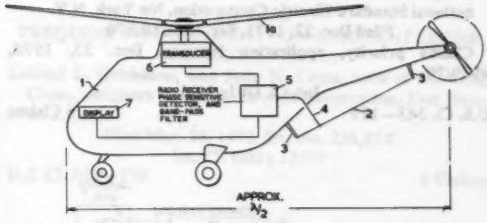
William Thomas Blackband, Farnborough, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England

Filed Sept. 15, 1971, Ser. No. 180,820

Claims priority, application Great Britain, Sept. 16, 1970, 44,194/70

Int. Cl. G01s *3/20*

U.S. Cl. 343—118 **3 Claims**



Radio direction finding apparatus for rotary wing aircraft includes an antenna, a radio receiver and modulation detection circuits for detecting a modulation component in the receiver output due to the interaction between the rotary wing and the antenna. The antenna is mounted on the aircraft so that the modulation component has a maximum value when the aircraft is orientated in the direction of the source of a suitable radio signal. An indicator is provided for indicating the strength of the modulation component. The detection circuits may include a phase sensitive detector or a band-pass filter.

3,754,265

SIGNAL PROCESSING MEANS AND METHOD

Raymond S. Markowitz, Wyncote, Pa., assignor to American Electronic Laboratories, Inc., Colmar, Pa.

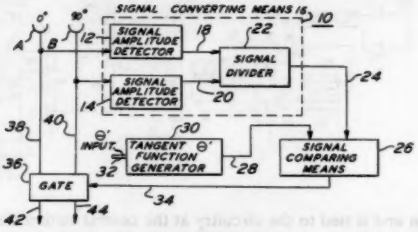
Filed Nov. 26, 1971, Ser. No. 202,515

Int. Cl. G01s *3/18*

U.S. Cl. 343—119 **18 Claims**

A signal processing means and method in which a plurality of orthogonally disposed directional radio frequency signal

receiving means, each deliver an output signal proportional to the magnitude of the directional component of a received electromagnetic signal corresponding its directional disposition, a signal converting means receives signals from said directional receiving means and delivers an output signal which is a predetermined function of said signals, a function generating means produces an output signal which is a tangent function of angle θ', and a signal comparing means receives the output signals from said converting means and said function generating means and delivers an output signal when its said input signals have a predetermined relationship. A gating means delivers output signals from said directional receiving means in response to the delivery of an output signal from said signal comparing means, thereby delivering output signals from said directional receiving means to correspond with a received electromagnetic signal having a direction θ corresponding to the angle θ' of the tangent function being generated by the function generating means.



3,754,266

DIRECTION FINDER AUTOMATIC CALIBRATION UPDATING CONTROL SYSTEM

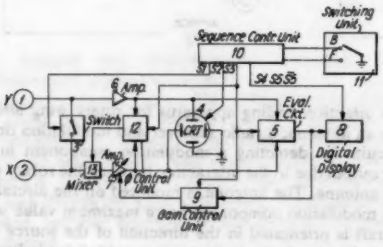
Dag Poppe, Gjettum; Odd Mathiesen, Oslo, and Gunnar Viggo Odegaard, Simensbraten, all of Norway, assignors to International Standard Electric Corporation, Nw York, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,870

Claims priority, application Norway, Dec. 23, 1970, 4929/70

Int. Cl. G01s 3/06

U.S. Cl. 343—119 **8 Claims**



An updating control system for two channel direction finders which includes dual loop antennas and a sense antenna; and circuits for setting the direction finder to a "Frequency" condition during which the direction finder may be tuned to a new frequency and to a "Bearing" condition in which bearings corresponding to the new frequency are taken. Individual amplifying means are provided to connect each of the two loop antennas to a plate pair of a cathode ray tube. Circuits are also shown for updating (adjusting) the phase and gain of the two signals, and for interconnecting the inputs of the two amplifiers during the updating process and for instrumenting correction of quadrantal errors.

3,754,267

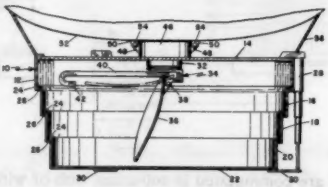
COLLAPSIBLE RADOME AND ANTENNA SYSTEM

Glenn A. Walters, Poway, and Richard H. Troester, Escondido, both of Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed Mar. 4, 1971, Ser. No. 120,862

Int. Cl. H01q 1/28

U.S. Cl. 343—705 **7 Claims**



A collapsible radome and antenna system in the form of a self-contained pod which is attached to an aircraft by quick disconnect means. In collapsed position the radome is a shallow cylindrical structure and the reflector of the antenna is folded. The radome has telescopic sections which are extended to an open position, the reflector unfolding when the structure is extended and being mounted on a scanning mechanism to move within the radome. In one form the radome has a fail safe capability to collapse in an emergency.

3,754,268

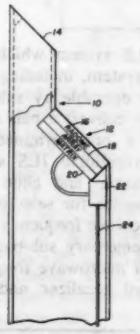
SUBMARINE-TO-SATELLITE COMMUNICATIONS ANTENNA

Jerry E. Boyns, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 8, 1972, Ser. No. 287,309

Int. Cl. H01q 1/34

U.S. Cl. 343—709 **4 Claims**



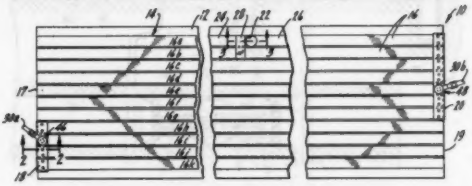
A phased-array antenna system for an SHF communications link between submarines and earth-orbiting satellites. The compact antenna system is mounted in the head of a submarine periscope and provides increased data rate, low-sidelobes, variable beam control, multiple-beam capability, and circular polarization. RF energy to be transmitted is conducted from transmitting means in the submarine through a waveguide run the length of the periscope to the antenna system which includes a high-power switch to commute the energy to a four-port hybrid matrix. The matrix feeds selectively predetermined phase progressions of the energy to the radiating array which comprises a plurality of probe-fed, cavity elements.

3,754,269

OMNI-DIRECTIONAL ANTENNA MOUNTED IN CIRCULAR RADOME

Lawrence A. Clavin, Barrington; Charles M. Eaton, Western Springs; Leo F. Hansman, Schiller Park, and Lenard J. Duncan, Spring Grove, all of Ill., assignors to Vorta Systems, Inc., Round Lake, Ill.

Filed Mar. 7, 1972, Ser. No. 232,562
Int. Cl. H01q 11/12
U.S. Cl. 343—742 11 Claims



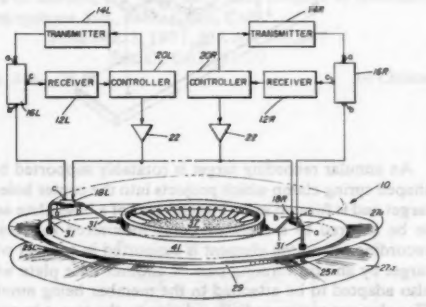
There is disclosed a method for manufacturing a television antenna, as well as a television antenna which is manufactured according to the preferred method. The television antenna of the preferred embodiment comprises a layer of flexible non-conductive material, such as mylar, on top of which is affixed a plurality of strips of flexible conductive material. Electrical leads are connected to the flexible strips of conductive material and the entire flexible structure is then placed on a rigid housing. In the preferred embodiment, the rigid housing comprises a circular non-conductive shell. The flexible layer of laminated conductive and non-conductive material is placed circumferentially around the interior of the circular shell, thereby forming an omni-directional antenna which is completely impervious to corrosive elements.

3,754,270

OMNIDIRECTIONAL MULTIBEAM ARRAY ANTENNA

Wilbur H. Thies, Jr., Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 24, 1972, Ser. No. 237,670
Int. Cl. H01q 19/06
U.S. Cl. 343—754 4 Claims



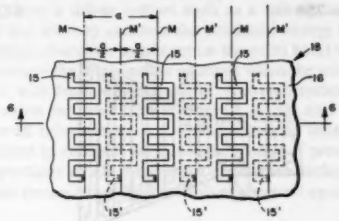
An omnidirectional multibeam array antenna assembly, for use particularly at radio frequencies, is shown. The preferred embodiment includes a circular dielectrically loaded parallel-plate lens joined by radially disposed transmission lines of equal length to antenna elements disposed on a circle concentric with such lens and radio frequency switching means to permit use of the assembly in either a "transmit" or "receive" mode. The dielectric constant of the material loading the parallel plate lens and the physical diameter of the circular lens are so selected as to produce equal RF path lengths to three (or four) points on a straight line tangent to the arc of elements relative to each one of a plurality of feed ports.

3,754,271

BROADBAND ANTENNA POLARIZER

James J. Epis, Sunnyvale, assignor to GTE Sylvania Incorporated, Mountain View, Calif.

Filed July 3, 1972, Ser. No. 268,479
Int. Cl. H01q 19/00
U.S. Cl. 343—756 4 Claims



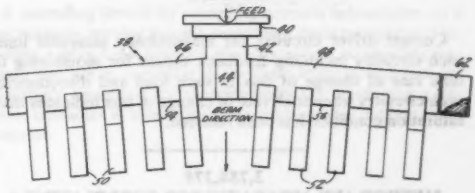
In a meanderline array random-polarizer comprising a plurality of stacked substantially identical arrays of laterally spaced square-wave shaped conductive strips or meanderlines arranged with parallel extending axes with each such axis spaced one array-period from its nearest counterparts, the improvement consisting of offsetting or staggering the meanderline axes of adjacent arrays by a distance preferably equal to one-half of the array-period. The meanderline axes in one set of alternate arrays are thus aligned in parallel planes spaced apart by an array-period; the meanderline axes in the remaining or second set of alternate arrays are also aligned in parallel planes spaced apart by one array-period; and the second set of parallel planes are offset or staggered by a distance equal to one-half of an array-period from the first set of parallel planes. A polarizer comprising a plurality of such staggered arrays has utility when placed in front of the aperture of pyramidal horn antenna for converting the linearly polarized wave of the horn to a circularly polarized wave.

3,754,272

FREQUENCY INDEPENDENT NON-RESONANT SERIES FED SLOT ANTENNA

Lenrod L. Goldstone, and John H. Cross, both of Norwalk, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 28, 1972, Ser. No. 238,854
Int. Cl. H01q 13/00
U.S. Cl. 343—778 6 Claims

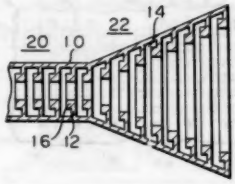


An interferometer antenna comprises upper and lower arrays, each having a non-resonant, terminated, center fed series feed with slot or hole coupling into individual horn radiators non-resonantly spaced somewhat off a half wavelength apart, each half of each array being at an angle other than 180° with the other half. Each half of the upper and lower array is fed with a power divider located near the apex of the array which equally divides the energy between the left and right hand halves of the array. Non-resonant horn spacing and the angular disposition of the array halves provides a beam in the far field along the bisector of the angle between the right and left halves, independent of variations in frequency over useful frequency ranges.

3,754,273
CORRUGATED WAVEGUIDE

Yoshihiro Takeichi; Tsutomu Hashimoto, and Fumio Takeda, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1971, Ser. No. 189,540
Claims priority, application Japan, Oct. 24, 1970, 45/93689
Int. Cl. H01q *13/02*; H03h *7/38*
U.S. Cl. 343—786 6 Claims

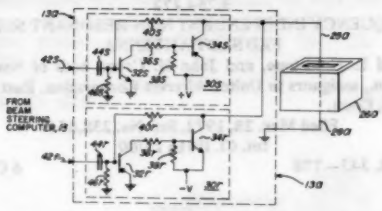


The disclosed circular waveguide is provided on the inner wall surface with corrugated slots each having a width abruptly changed from a smaller value on that portion near to the axis of the waveguide to a larger value on the remaining portion of the slot. Also an electromagnetic horn is disclosed including such slots.

3,754,274
CURRENT DRIVER CIRCUITRY FOR FERRITE PHASE SHIFTERS

Ernest P. Auger, Billerica, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 130,124, April 1, 1971, abandoned. This application July 31, 1972, Ser. No. 276,627
Int. Cl. H01q *3/26*
U.S. Cl. 343—854 3 Claims



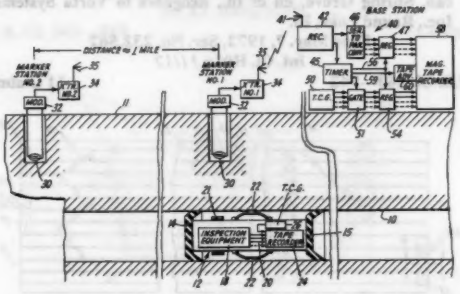
Current driver circuitry for magnetically saturable loads, such circuitry including feedback means for monitoring the time rate of change of flux in such load and disconnecting such circuitry when such rate of change of flux indicates that a saturation condition has been reached.

3,754,275
METHOD AND APPARATUS FOR CORRELATING A PIPELINE INSPECTION RECORD TO KNOWN EXTERNAL LOCATIONS

Nick G. Carter, and Charles C. Moore, III, both of Houston, Tex., assignors to AMF Incorporated, White Plains, N.Y.

Filed Sept. 17, 1971, Ser. No. 181,406
Int. Cl. G01d *5/00*
U.S. Cl. 346—1 17 Claims

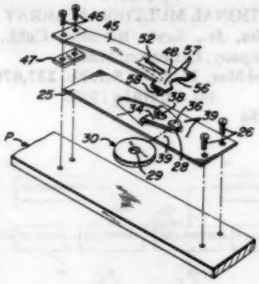
Apparatus and methods are disclosed for correlating a pipeline inspection record to known external locations along the pipeline. Inspection signals produced by inspection apparatus transported through a pipeline are recorded on magnetic tape along with regularly occurring coded time signals produced by a time code generator. At known locations external to the pipeline the passage of the inspection apparatus through the pipeline is detected and the exact time of passage is recorded either at the respective known locations, or via telemetry, at a base station. Magnetic tape having inspection signals and time coded signals is correlated with time signals recorded when inspection apparatus passed known locations to indicate the position of known external locations on the inspection record.



3,754,276
INSTRUMENT FOR MECHANICALLY RECORDING STRAINS

Thomas E. Endres, Kettering, Ohio, assignor to Technology Incorporated, Dayton, Ohio

Filed Aug. 9, 1971, Ser. No. 169,927
Int. Cl. G01d *15/02*
U.S. Cl. 346—7 21 Claims



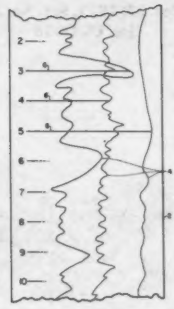
An annular recording target is rotatably supported by a U-shaped spring clamp which projects into the center hole of the target and is formed as an integral part of a base plate adapted to be secured to a member being monitored for strains. A recording or scratch element is supported in contact with the target by an arm forming part of another base plate which is also adapted to be attached to the member being monitored. The element moves radially relative to the target in response to linear movement between the base plates, and an actuating mechanism rotates or indexes the target in one direction in response to relative linear movement between the base plates in either direction. The actuating mechanism includes diametrically opposed sets of inclined spring fingers which are supported by the arm and engage either the radial or peripheral surface of the target at 90° relative to the linear direction of movement of the recording element. The recording element may be located at different radial positions for accommodating targets of different diameters, and in one embodiment, the target is constructed of a light transmittable plastics material which is processed to form a tinted face portion which is adapted to be penetrated by the scratch element.

3,754,277

TRACE IDENTIFYING MEANS FOR MULTIPLE TRACE RECORDER

Peter R. Lowe, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 3, 1972, Ser. No. 214,616
Int. Cl. G01d *1/00*
U.S. Cl. 346—23 9 Claims



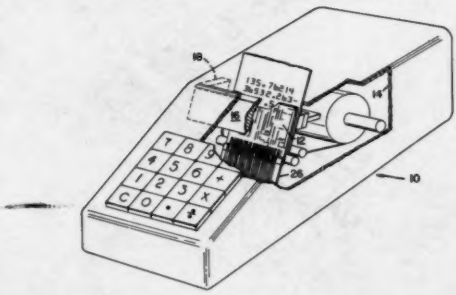
In a multiple trace recording system of the type which might use a CRT as the writing instrumentality, means are provided for positively identifying each trace on the record. The identifying means includes means for printing, along one margin of the record member, ordinal numbers representative of the several input signal channels. The identifying means further includes means for generating a transverse trace line extending from a point adjacent to each of the imprinted numbers to a point of juncture with the corresponding data trace.

3,754,278

THERMAL PRINTING SYSTEM

Howard C. Borden, Jr., Atherton, Calif., assignor to American Micro-systems, Inc., Santa Clara, Calif.

Filed Dec. 1, 1971, Ser. No. 203,647
Int. Cl. G01d *15/10*
U.S. Cl. 346—76 R 14 Claims



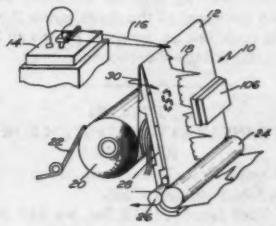
A thermal printer for electronic calculators or other computing devices comprises a multi-layer print head with a metallized layer on one outer surface formed as a series of master characters each comprised of a plurality of segments which are electrical resistance elements that extend between end contacts. These contacts are connected to an intermediate or buried metallized layer within the ceramic body which in turn provides for interconnections with another metallization layer including input ground and driver lead contact pads formed on the other outer surface of the ceramic body. A logic control sub-system for the printer receives signals from a driver output such as a calculator computing circuit and thereby controls the electrical energy furnished to the various character segments on the print head to heat them and produce the appropriate printout when the print head is in contact with heat sensitive paper. This sub-system stores the information received from the driver output and then utilizes the stored information in a multiplexing or time sharing arrangement to energize sequentially groups of preselected segment portions of all the master characters during a series of separate consecutive time periods of the print cycle.

3,754,279

THERMAL RECORDER HAVING ANALOGUE STYLUS AND PRINT HEAD

Leo F. Valenti, and Paul S. Follett, both of East Greenwich, R.I., assignors to Techni-Rite Electronics, Inc., East Greenwich, R.I.

Filed Jan. 31, 1972, Ser. No. 222,172
Int. Cl. G01d *15/10*
U.S. Cl. 346—76 R 4 Claims



A recording device for recording numeric information on a continuously moving thermo-responsive sheet material and including a print head having a plurality of heat conducting segments that are in contact with the sheet material and that are selectively energized for thermographically producing a numeric character at intervals on the continuously moving sheet material.

3,754,280

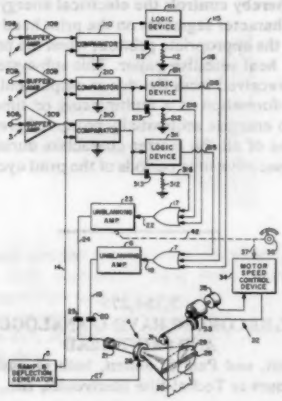
APPARATUS FOR PRODUCING RECORDED TRACES OF UNIFORM DENSITY

Peter R. Lowe, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 17, 1972, Ser. No. 235,536
Int. Cl. G01d
U.S. Cl. 346—110 R 2 Claims

The values of a plurality of data signals to be plotted against time as traces on a moving photosensitive record sheet are

sampled by being simultaneously compared continuously with a cyclically repeated ramp voltage by a plurality of comparators. Each of the latter produces an output each time that the ramp voltage reaches the value of the corresponding signal. The ramp voltage is synchronized with the horizontal sweep for a fiber optics cathode ray tube, across the optics strip of which the sheet is advanced at right angles. A logic device for each signal unblanks the normally blanked beam of the tube for a period in each sweep to mark a dynamic line on the



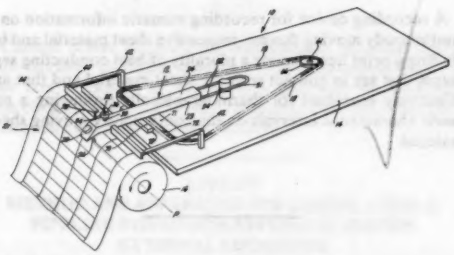
sheet. Each period is that in which the ramp voltage lies between the two values of the corresponding signal at which the corresponding comparator output is produced for the present and the immediately previous sweeps. When these two values are equal, an RC circuit responsive to the corresponding comparator output, and an amplifier adjusted in accordance with the speed of the sheet, cause the beam to mark a fixed length static line on the sheet having an intensity which is a direct function of the sheet speed.

3,754,281

RECTILINEAR STYLUS SYSTEM FOR CHART RECORDER

Richard S. Kampf, Costa Mesa, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 17, 1972, Ser. No. 218,141
Int. Cl. G01d *15/24*
U.S. Cl. 346—139 R **5 Claims**



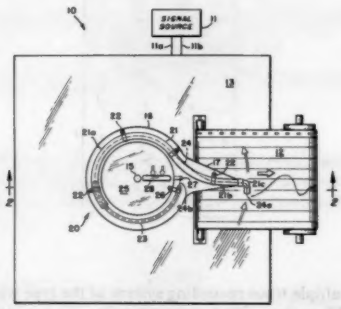
A stylus arm adapted to track along a rectilinear marking path extending across at least one channel of a chart recorder. The free end of the stylus arm carries a stylus adapted to engage the chart, and a guide bearing adapted to engage an elongate guide surface to guide the stylus along the rectilinear path. The constrained end of the stylus arm includes a U-shaped portion which engages a recessed channel in a mounting pin secured to the support platform, so that the stylus arm is both pivotably and slidably mounted with respect to the platform. Means are provided for driving the free end of the stylus arm from one side of the channel to the other, with the effective length of the stylus arm being extended as it approaches the outer reaches of the channel to permit the stylus to track along the rectilinear marking path.

3,754,282

HIGH RESOLUTION RECORDER

Leighton L. Morse, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 22, 1972, Ser. No. 317,874
Int. Cl. G01d
U.S. Cl. 346—139 C **7 Claims**



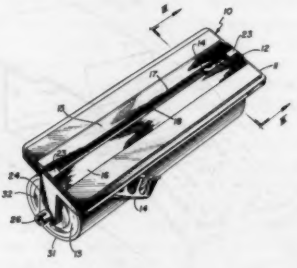
A recorder having a rotary driven stylus mechanism electronically cooperating with an electro-sensitive recording paper is modified to allow continuous unattended operation. An integral elongate stylus has a portion wrapped about an axis of rotation and the tip of a radially extending portion is brought to bear against the recording paper at a constant pressure and orientation irrespective of the accumulated erosion caused by prolonged operation. The aerodynamic resistance of a vane creates a force to displace the stylus to ensure its predetermined constant pressure and orientation as the stylus wears away to provide uniform operational characteristics over relatively long periods.

3,754,283

RECORDING DRUM WITH HELICAL ELECTRODE

Milton Alden, Brockton, Mass., assignor to Alden Research Foundation, Brockton, Mass.

Division of Ser. No. 806,795, March 13, 1969, Pat. No. 3,611,424. This application Oct. 4, 1971, Ser. No. 186,093
Int. Cl. G01d *15/06*
U.S. Cl. 346—139 C **1 Claim**



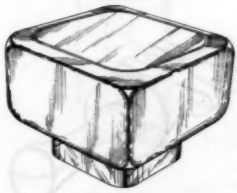
A recording drum with helical electrode wherein the electrode has legs which are joined to the surface of the drum by a body of elastomer material.

DESIGNS

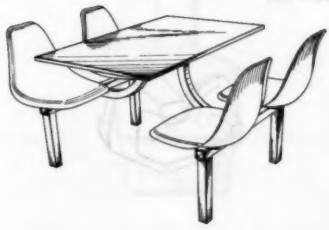
AUGUST 21, 1973

228,160
GLOVE
Theresa Deraline Harrison, 1115 W. 97th St., Los Angeles, Calif. 90044
Filed July 17, 1971, Ser. No. 24,934
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—364

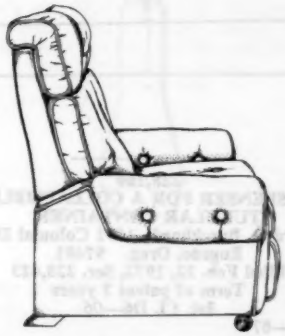
228,161
TABLE
William C. Andrus, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Mar. 27, 1972, Ser. No. 238,729
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



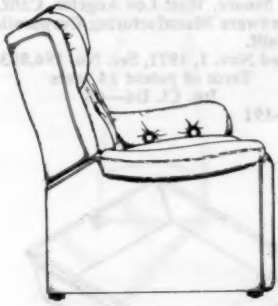
228,162
COMBINED TABLE AND MULTIPLE SLATING UNIT
Roy W. Fink, Portage, Mich., assignor to The Vecta Group, Inc., Kalamazoo, Mich.
Filed Aug. 30, 1971, Ser. No. 176,428
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—45



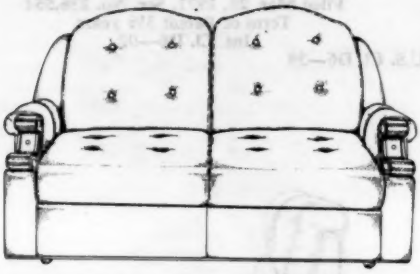
228,163
CHAIR
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, West Springfield, Mass.
Filed Mar. 20, 1972, Ser. No. 236,554
Term of Patent 3½ years
Int. Cl. D6—*02*
U.S. Cl. D6—39



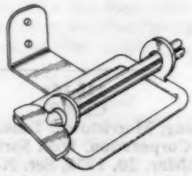
228,164
CHAIR
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, West Springfield, Mass.
Filed Mar. 20, 1972, Ser. No. 236,555
Term of patent 3½ years
Int. Cl. D6—*02*
U.S. Cl. D6—39



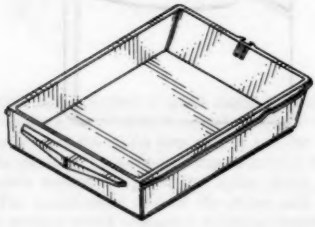
228,165
SOFA
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, West Springfield, Mass.
Filed Mar. 20, 1972, Ser. No. 236,553
Term of patent 3½ years
Int. Cl. D6—*02*
U.S. Cl. D6—63



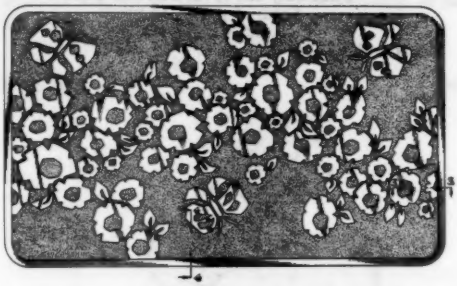
228,166
DISPENSER FOR A COLLAPSIBLE TUBULAR CONTAINER
Edward O. Burckhardt, 1691 Colonial Drive, Eugene, Oreg. 97401
Filed Feb. 22, 1972, Ser. 228,423
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—87



228,167
DRAWER WITH INTEGRAL HANDLE
Frank Holmes, Buena Park, George Read, Glendora, and William A. Moore, West Los Angeles, Calif., assignors to Ajax Hardware Manufacturing Corporation, City of Industry, Calif.
Filed Nov. 1, 1971, Ser. No. 194,803
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



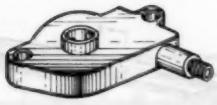
228,168
BATH MAT
Ellie J. Huggins, Wheaton, Ill., assignor to Pretty Products, Inc., Coshocton, Ohio
Filed Feb. 14, 1972, Ser. No. 226,398
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—211



288,169
CAM FOR A FASTENING MECHANISM FOR CONTAINER DOORS
Barry Stanley Morris, Walsall, England, assignor to The Bloxwich Lock and Stamping Company Limited, Walsall, England
Filed Oct. 30, 1972, Ser. No. 301,856
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—137

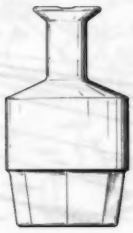
228,170
KEEPER FOR A FASTENING MECHANISM FOR CONTAINER DOORS
Barry Stanley Morris, Walsall, England, assignor to The Bloxwich Lock and Stamping Company Limited, Walsall, England
Filed Oct. 30, 1972, Ser. No. 301,857
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—137

228,171
WINDOW OPERATOR OR SIMILAR ARTICLE
Lyle M. Northrup, New Hampton, Iowa, assignor to Lynor Engineering, Inc., New Hampton, Iowa
Filed Nov. 26, 1971, Ser. No. 202,718
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—153



228,172
COMBINED BOTTLE AND CAP THEREFOR
David S. Byrne, Atlantic Highlands, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Nov. 16, 1971, Ser. No. 199,406
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—118

228,173
DECANTER
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Apr. 24, 1972, Ser. No. 247,228
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—128

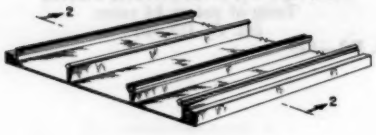


228,174
BOTTLE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 3, 1972, Ser. No. 231,782
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—129

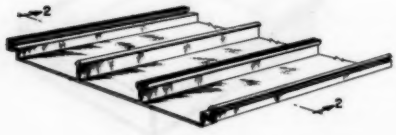
228,175
BOTTLE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Apr. 17, 1972, Ser. No. 245,022
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—149

228,176
JAR
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 21, 1972, Ser. No. 219,921
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—162

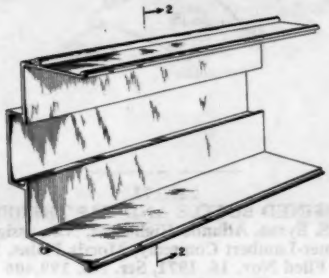
228,177
SNAP-ON PANELING OR SIMILAR ARTICLE
Joseph N. LaBorde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Dec. 22, 1971, Ser. No. 211,154
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



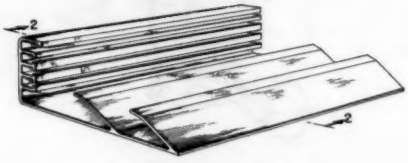
228,178
SNAP-ON PANELING OR SIMILAR ARTICLE
Joseph N. LaBorde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Dec. 22, 1971, Ser. No. 211,155
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



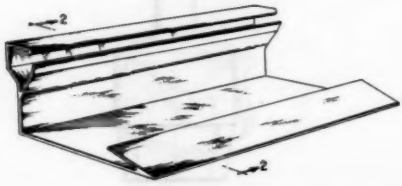
228,179
DOOR JAMB OR SIMILAR ARTICLE
Joseph N. LaBorde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Dec. 22, 1971, Ser. No. 211,147
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



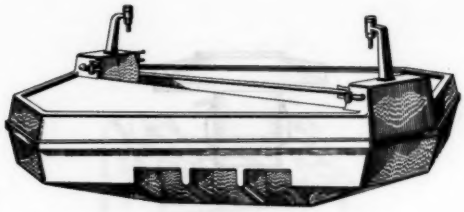
228,180
WINDOW JAMB OR SIMILAR ARTICLE
Joseph N. LaBorde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Dec. 22, 1971, Ser. No. 211,150
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

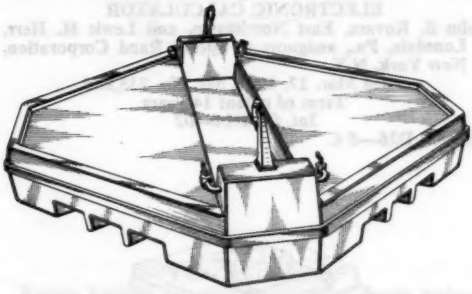


228,181
SNAP-ON CASING OR SIMILAR ARTICLE
Joseph N. LaBorde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Dec. 22, 1971, Ser. No. 211,153
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

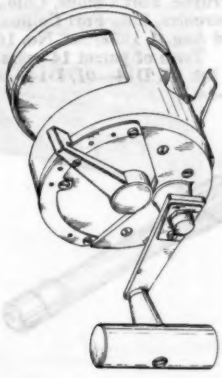


228,182
LABORATORY TABLE
Arthur W. Carlson, Muskegon, Mich., assignor to E. H. Sheldon and Company, Muskegon, Mich.
Filed Mar. 10, 1971, Ser. No. 123,127
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D16—2 C





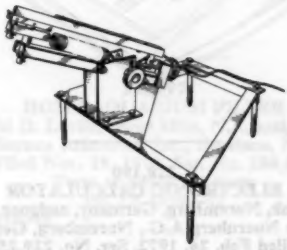
228,183
CASTING REEL FOR SEA-FISHING
Kent Tufvesson, Karlshamn, Sweden, assignor to ABU AB, Svangsta, Sweden
Filed Jan. 21, 1971, Ser. No. 108,666
Claims priority, application Sweden, July 21, 1970, 218/70
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



228,184
FISH LURE
Ewell J. Harris, Rte. 3, Box 135A, Lot 13, Adrian, Mich. 49221
Filed June 29, 1972, Ser. No. 267,407
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

228,185
SOFT PLASTIC BAIT FOR FISHING
Joseph S. Wascow, 3048 N. Neva, Chicago, Ill. 60634
Filed Sept. 5, 1972, Ser. No. 286,050
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

228,186
TARGET TRAP
Austin M. Wortley, Jr., Downingtown, Pa., assignor to Penguin Industries, Inc., Parkesburg, Pa.
Filed Sept. 28, 1971, Ser. No. 184,653
Term of patent 14 years
Int. Cl. D22—*04*
U.S. Cl. D22—99



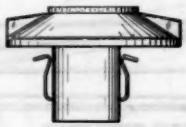
228,187
FREE STANDING FIREPLACE
William R. Damm, 19434 NE. 159th, Woodinville, Wash. 98072
Filed Sept. 30, 1971, Ser. No. 185,480
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

228,188
DENTAL FLOSS APPLICATOR
James F. Howison, Rte. 1, Box 1249K, Virginia Beach, Va. 23456
Filed Apr. 16, 1971, Ser. No. 134,913
Term of patent 7 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D

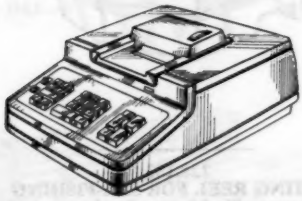
228,189
CASE FOR A CALCULATOR
Myron Beitler, West Orange, N.J., and Gary Jaffae, Baltimore, Md., assignors to Litton Business Systems, Inc., Orange, N.J.
Filed Sept. 20, 1971, Ser. No. 182,310
Term of patent 7 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

228,190
ELECTRONIC CALCULATOR
Manfred Link, Nuremberg, Germany, assignor to Triumph Werke Nuernberg A.G., Nuremberg, Germany
Filed Feb. 24, 1972, Ser. No. 229,252
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

228,191
LAMPHOLDER SET FOR FLUORESCENT LAMPS
James F. Sullivan, Eastchester, N.Y., assignor to Kulka Electric Corp., Mount Vernon, N.Y.
Filed Mar. 16, 1972, Ser. No. 235,464
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 G

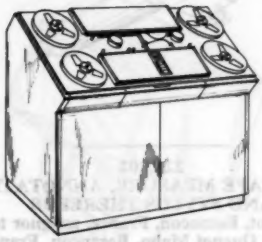


228,192
ELECTRONIC CALCULATOR
John S. Kovacs, East Norristown, and Lewis H. Herr, Lansdale, Pa., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Mar. 17, 1972, Ser. No. 235,885
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



228,193
CORDLESS MICROPHONE
Jerry R. Pruyne, Fort Collins, Colo., assignor to Sonotronics, Ltd., Fort Collins, Colo.
Filed Aug. 4, 1971, Ser. No. 169,163
Term of patent 14 years
Int. Cl. D14—*01*; D14—*03*
U.S. Cl. D26—14 J

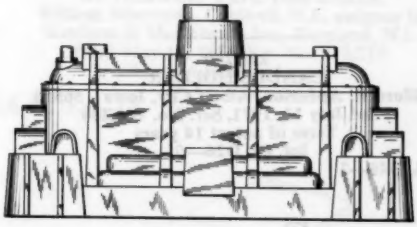
228,194
MAGNETIC TAPE DUPLICATOR CONSOLE
Benjamin N. Yamada, Sunnyvale, Calif., assignor to Consolidated Video Systems, Inc., Santa Clara, Calif.
Filed Apr. 24, 1972, Ser. No. 247,262
Term of patent 14 years
Int. Cl. D14—*01*; D14—*02*
U.S. Cl. D26—14 B



228,195
TAPE RECORDER
Katsuo Taguchi, Higashikatsushika-gun, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed Sept. 25, 1972, Ser. No. 291,596
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

228,196
PALM FROND FIGURE
Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211
Filed Oct. 20, 1970, Ser. No. 25,573
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 E

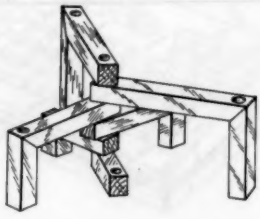
228,197
HOME AQUARIUM FILTER
David D. Lovitz, Short Hills, N.J., assignor to Sternco Industries, Inc., Harrison, N.J.
Filed Nov. 19, 1971, Ser. No. 200,647
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—9



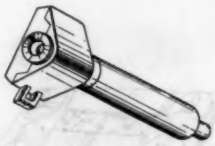
228,198
GOLF CLUB GRIP
Clifford A. Spencer, Akron, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed May 21, 1971, Ser. 146,004
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GS

228,199
SCOOTER
James N. Howard, 12361 E. Colby Drive, Mishawaka, Ind. 46544
Filed May 12, 1972, Ser. No. 252,951
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AT

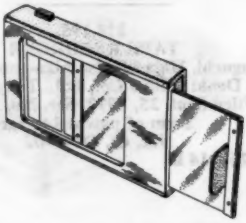
228,200
CANDLE HOLDER
Clifford R. Anderson, Albert City, Iowa 50510
Filed July 19, 1971, Ser. No. 164,204
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2



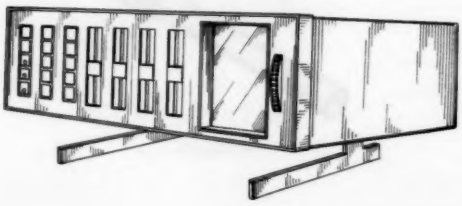
228,201
FLASHLIGHT
Sidney Schwartz, 307 5th Ave., New York, N.Y. 10016
Filed May 30, 1972, Ser. No. 258,236
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



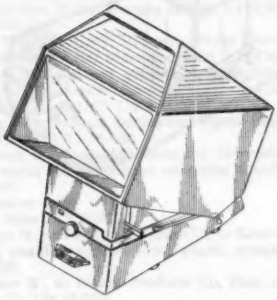
228,202
COMBINED TAPE MEASURE, ANNOTATION PAD, AND STYLUS THEREFOR
Michel Quenot, Besancon, France, assignor to Manufacture Quenot Mabo, Besancon, France
Filed Dec. 3, 1971, Ser. No. 204,781
Claims priority, application France June 7, 1971
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—1 R



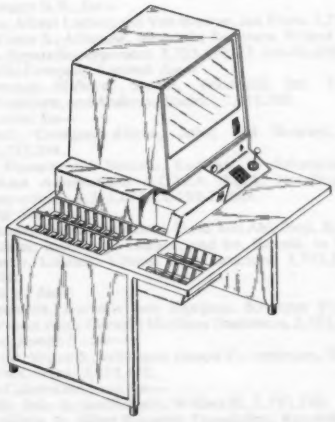
228,203
RADIO
Carl Yurdin, Port Washington, N.Y., assignor to Harman-Kardon Incorporated, Plainview, N.Y.
Filed Aug. 10, 1971, Ser. No. 170,673
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



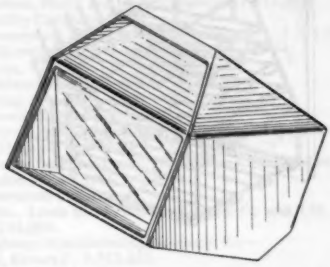
228,204
MICROFILM READER
Stephen P. Hines, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 3, 1972, Ser. No. 231,802
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N



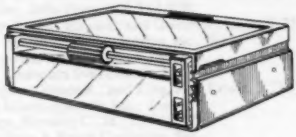
228,205
COMBINED MICROFICHE RETRIEVAL AND VIEWER UNIT
Andrew Virgil McClare, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 17, 1972, Ser. No. 254,344
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 N



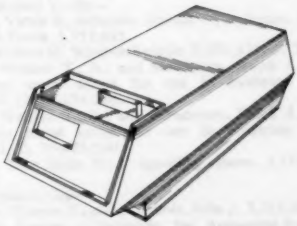
228,206
VIEWING SCREEN HOUSING FOR A MICROFILM READER
Stephen P. Hines, 1669 Lake Ave., Rochester, N.Y. 14650
Original application Mar. 3, 1972, Ser. No. 231,802. Divided and this application July 10, 1972, Ser. No. 270,372
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N



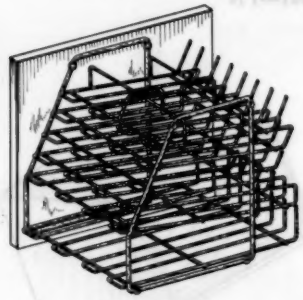
228,207
COMBINED MICROFICHE READER AND PROJECTOR
George Hoehne, Crescent Beach Road, Glen Cove, N.Y. 11542
Filed Apr. 20, 1972, Ser. No. 246,098
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N



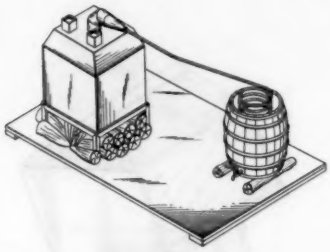
228,208
AUTOMATIC TAPE DISPENSER
William Macowski, Caldwell, N.J., assignor to Ketchem & McDougall, Inc., Roseland, N.J.
Filed May 14, 1971, Ser. No. 143,716
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 B



228,209
STATIONERY ORGANIZER
David Woods, Quakertown, Pa., assignor to J. G. Furniture Company, Inc., New York, N.Y.
Filed Mar. 31, 1971, Ser. No. 130,066
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—9 A



228,210
BEVERAGE DISPENSER
Clyde D. Scott, Rte. 3, Box 1837, Fort Smith, Ark. 72901
Filed June 16, 1971, Ser. No. 153,911
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D94—3 C



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF AUGUST, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abramson, Carl N.; and Jones, Douglas G., to Adaptive Technology Inc. Asynchronous sampling and reconstruction for asynchronous sample data communication system. 3,754,098, Cl. 178-69.50r.

Abu El-Haj, Marwan Jawdat: *See—*
Cronin, Timothy Henry; Hammen, Philip Dietrich; Abushanab, Elie; and Abu El-Haj, Marwan Jawdat, 3,753,987.

Abushanab, Elie: *See—*
Cronin, Timothy Henry; Hammen, Philip Dietrich; Abushanab, Elie; and Abu El-Haj, Marwan Jawdat, 3,753,987.

Acket, Gerard Adriaan; and Vlaardingerbroek, Marinus Teunis, to U.S. Philips Corporation. Semiconductor device for amplifying micro-wave. 3,754,191, Cl. 330-5.000.

Adam, Roger Francois Jean. Device for irrigation especially of flower pots. 3,753,315, Cl. 77-38.000.

Adamic, Joseph W., Jr., to Motorola, Inc. Increasing field inversion voltage of metal oxide on silicon integrated circuits. 3,753,806, Cl. 148-188.000.

Adams & Whelan: *See—*
Whelan, John C., 3,753,727.

Adams, Joseph H.; and Kurtz, Leonhard D., to Sutures, Inc. Method of fabricating pliable polyfilamentous plastic strands. 3,754,069, Cl. 264-131.000.

Adams, Robert B., to Moore Products Co. Heat sensitive detector. 3,754,201, Cl. 338-28.000.

Adams, Stuart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, to Boots Company Limited, The. Thiaxanthene derivatives. 3,754,005, Cl. 260-328.000.

Adaptive Technology Inc.: *See—*
Abramson, Carl N.; and Jones, Douglas G., 3,754,098.

Adelsberger, Klaus; Hahn, Erwin; and Scheuermann, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Pyrazoline derivatives. 3,753,978, Cl. 260-239.900.

Adomaitis, Domas: *See—*
Turner, Howard M.; Adomaitis, Domas; and Boik, Elmer J., 3,753,641.

AEG-Elotherm G.m.b.H.: *See—*
Gosger, Peter, 3,753,878.

Aerojet-General Corporation: *See—*
Cassidy, Frank H.; and Garcia, Ramon, 3,753,345.

Afton, Eloff, Jr.: *See—*
Criswell, Richard L., 3,753,550.

Agence National de Valorisation de La Recherche (ANVAR): *See—*
Walter, Jacques, 3,754,117.

Agfa-Gevaert Aktiengesellschaft: *See—*
Burger, Theodor; Hellmig, Erhard; and Vanheerentals, Jacques Leon, 3,753,707.
Hujer, Friedrich; and Dietl, Wilhelm, 3,753,330.

Agfa-Gevaert N.V.: *See—*
Poot, Albert Lucien; and Van Besauw, Jan Frans, 3,753,395.

Aiello, Victor S.; Albanese, Joseph P.; Anderson, Robert V.; and Platt, Frank. Separating apparatus. 3,753,492, Cl. 210-96.000.

Aisen Seiki Company, Limited: *See—*
Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,753,798.

Aitken, John: *See—*
Attali, Georges; Aitken, John; and Bernard, Jean-Louis, 3,753,294.

Aiuola, Franco; and Nannini, Luciano, to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A. Handling device for delicate articles. 3,753,484, Cl. 198-20.00r.

Aki, Junji: *See—*
Kakuda, Hisashi; Takahashi, Shiro; and Aki, Junji, 3,753,743.

Akiga, Taiui; Isukikawa, Tatsumi; and Ito, Hiroshi, to Nissan Motor Company, Limited. Vehicle body structure. 3,753,573, Cl. 280-106.500.

AKZO N.V.: *See—*
Leeuwerik, Cornelis Jan; Huntjens, Johannes Franciscus; and Vrouenraets, Cornelis Martinus Franciscus, 3,753,953.

Albanese, Joseph P.: *See—*
Aiello, Victor S.; Albanese, Joseph P.; Anderson, Robert V.; and Platt, Frank, 3,753,492.

Alberto-Culver Company: *See—*
Cella, John A.; and Schmitt, William H., 3,753,739.

Alden, Milton, to Alden Research Foundation. Recording drum with helical electrode. 3,754,283, Cl. 346-139.00c.

Alden Research Foundation: *See—*
Alden, Milton, 3,754,283.

Alewitz, Sam, to Perfection Corporation. Anode fitting. 3,753,888, Cl. 204-197.000.

Alexander, Winser E.: *See—*
Dybwad, Jens P.; Alexander, Winser E.; and Zinnow, Karl P., 3,753,472.

Alkan, R., & Cie: *See—*
Savarieau, Henri; and Bourrie, Georges, 3,753,316.

Allen-Bradley Company: *See—*
Dummermuth, Ernst; and Walters, Ronnie G., 3,754,235.

Alliance Manufacturing Company, Inc., The: *See—*
Deming, Andrew F., 3,754,189.

Alliance Manufacturing Company, The: *See—*
Deming, Andrew F., 3,754,187.

Allied Chemical Corporation: *See—*
Beyleveld, Wilhelmus M.; Oxenrider, Bryce C.; and Woolf, Cyril, 3,754,026.
Haylock, John Christopher; and Wagner, John Walter, 3,753,955.
Weedon, Gene Clyde, 3,753,949.

Allied Chemicals Corporation: *See—*
Anello, Louis G.; Sweeney, Richard F.; and Litt, Morton H., 3,754,009.

Allis-Chalmers Manufacturing Company: *See—*
Kohl, Robert F., 3,753,682.

Alps Electric Co., Ltd.: *See—*
Kaneko, Fumitaka; and Suzuki, Shinzo, 3,754,243.

Alps Motorola, Inc.: *See—*
Noguchi, Masaru, 3,754,167.

Alsthom-Savisienn: *See—*
Lesueur, Gilbert, 3,754,143.

Aluminum Company of America: *See—*
Gayner, Herbert; and Demsey, John N., Jr., 3,753,847.

Ambert, Jack: *See—*
Beccu, Klaus; Gutjahr, Manfred; Ambert, Jack; and Keiser, Helmuth, 3,753,782.

Ambrosia, Alphonse; and Sambucetti, Carlos J., to International Business Machines Corporation. Electrochemical recording method. 3,753,869, Cl. 204-2.000.

American Cyanamid Company: *See—*
Forgione, Peter Salvatore, 3,753,861.
Grayson, Martin, 3,754,035.
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Bouchaudon, Jean; and Jolles, Georges, to Rhone-Poulenc S.A. Cyclopeptides derived from polymyxins and their preparation. 3,753,970, Cl. 260-112.500.

Boucher, Raymond M. G., to Wave Energy Systems, Inc. Method and apparatus for surface sterilization. 3,753,651, Cl. 21-54.00r.

Bourchier, Kenneth Arthur; and Stewart, Donald Fergusson, to Imperial Chemical Industries of Australia and New Zealand Limited. Process for the coproduction of zinc and sulphuric acid from zinc sulphide ores. 3,753,692, Cl. 75-115.000.

Bourrie, Georges: *See*—
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Bower, Gerald F., to Bower Manufacturing Co., Inc., The. Padlock device. 3,753,360, Cl. 70-39.000.

Bower Manufacturing Co., Inc., The: *See*—
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Boyd, Edward A. Converging vortex apparatus for separating oil from water. 3,753,496, Cl. 210-242.000.

Boyns, Jerry E., to United States of America, Navy. Submarine-to-satellite communications antenna. 3,754,268, Cl. 343-709.000.

BP Chemicals Limited: *See*—
Yoemans, Bertram, 3,754,025.

Bradshaw, Harry; McKenney, Hunter R.; and McKenzie, Roland W., to Standard Forge and Axle Company, Incorporated. Method of making a brake shoe. 3,753,460, Cl. 164-131.000.

Branda, Daniel Hamilton; and Branda, Richard Daniel, to Automeasure, Inc. Apparatus for use in the making or alteration of garments. 3,753,293, Cl. 33-8.000.

Branda, Richard Daniel: *See*—
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Brandell, John R. Practice golf club. 3,753,564, Cl. 273-186.00a.

Brandenburg, Helmut, to Gebr. Eickhoff, Maschinenfabrik und Eisengeisserei m.b.H. Apparatus for producing double faced corrugated paperboard. 3,753,838, Cl. 156-555.000.

Brandle, Merrill: *See*—
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Brant, Malcolm Victor: *See*—
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Bratschi, Konrad. Electromechanical pulling device for rail-guided hangings, particularly curtains. 3,753,457, Cl. 160-331.000.

Braude, George L.; and Stahly, Eldon E., to Grace, W. R., & Co. Fire retardant compositions containing nitrogen-phosphorous halogen adducts. 3,753,770, Cl. 117-138.000.

Braun, Ralph V., to Kimberly-Clark Corporation. Compressively deformed cellulosic laminates with improved drape, bulk, and softness. 3,753,844, Cl. 161-57.000.

Brenneman, Richard Lee: *See*—
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Bretthauer, Kalus: *See*—
Bauer-Steinke, Ursula; Maier, Bruno; and Bretthauer, Kalus, 3,753,880.

Breuer, Hermann; and Schulze, Ernst, to Squibb, E. R., & Sons, Inc. 4-Amino-2-styrylquinazoline compounds. 3,753,981, Cl. 260-240.00d.

Brieva, Antonio Mario; Lopez, Vicente; and Soulages, Nestor Luis. Method and apparatus for gaseous-phase chemical reaction analysis. 3,753,653, Cl. 23-230.00r.

Bristow, Norman William: *See*—
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British Aircraft Corporation Limited: *See*—
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British Aluminium Company Limited, The: *See*—
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British Aluminum Company Limited, The: *See*—
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Brizee, Mary Jane W.: *See*—
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Brockhouse Conveyor Bearings Limited: *See*—
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Brode, George L.; and Kawakami, James H., to Union Carbide Corporation. Preparation of polyamic acids in ketone solvents. 3,753,948, Cl. 260-49.000.

Brooshok, Melvin J., to Merck & Co., Inc. Rapidly disintegrating bakery enrichment wafer. 3,753,732, Cl. 99-91.000.

Bross, Helmut, to Bross, Helmut, mesne. Remote controlled action toy. 3,753,313, Cl. 46-202.000.

Bross, Helmut, mesne: *See*—
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Brown, George A.; and Hinds, Michael Francis, to Southern Line Cleaning, Inc. Method for sealing pipelines. 3,753,766, Cl. 117-97.000.

Brown International Corporation: *See*—
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Brown, Milton; Beers, Eugene W.; and Nicole, Andre, to Dymo Industries, Inc. Automatic push button tape embossing machine. 3,753,482, Cl. 197-6.600.

Brown, Neil L., to Bissett-Berman Corporation, The. Transducer system. 3,753,373, Cl. 73-398.00c.

Brown, Richard E., to Warner-Lambert Company. Substituted imidazolinylmethyl anthranilates. 3,754,002, Cl. 260-309.600.

Browning, William C.; and Chesser, Billy G., to Milchem Incorporated. Composition and process for cross-linking macromolecular polysaccharide solutions. 3,753,971, Cl. 260-124.00r.

Brugarolas, Antonio; and Elias, Elias G., to Elias & Brugarolas. General purpose surgical drain. 3,753,439, Cl. 128-350.00r.

Bruner, James N., to Sangamo Electric Company. Remote meter reading system employing semipassive transponders. 3,754,250, Cl. 343-6.51c.

Brunet, Jacques, to La Cellophane. Gold tooling process and laminate therefor. 3,753,850, Cl. 161-214.000.

Brunot, William Turner, mesne: *See*—
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Bryan, John F., Jr. Spike driving system. 3,753,404, Cl. 104-17.00r.

Bryan, John F., Jr. Spike positioning system. 3,753,405, Cl. 104-17.00r.

Bryan, William R.; and De Verteuil, George F., to Texaco Trinidad, Inc. N-paraffin adsorption with a 20 to 55% overcharge. 3,753,896, Cl. 208-310.000.

Bryant, Charles Harry. Fishing bobber. 3,753,309, Cl. 43-17.500.

Buchanan, John Brown: *See*—
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Buckholz, Ronald J., to Designed Mailing Accessories, Inc. Stamp applying head. 3,753,836, Cl. 156-521.000.

Budman, Ronald R. Abrasive cloth cleaner. 3,753,269, Cl. 15-160.000.

Bugel, Roelof Dirk, to U.S. Philips Corporation. Method of electrically welding a capacitor electrode to the capicator housing. 3,754,113, Cl. 219-107.000.

Bulion, Michael Stuart: *See*—

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Burger, Karl-Heinz, to Bosch, Robert, G.m.b.H. Apparatus for heating and cooling a vehicle passenger compartment. 3,753,462, Cl. 13-165.000.

Burger, Theodor; Heilmig, Erhard; and Vanheerentals, Jacques Leon, to Agfa-Gevaert Aktiengesellschaft. Method of controlling exposure during photographic printing of variable contrast material. 3,753,707, Cl. 96-27.000.

Burkhardt, Max; Thalmann, Armin; Fiala, Ferdinand; and Schmid, Markus, to Concast AG. Method and apparatus for cooling and guiding strand in continuous casting machines. 3,753,459, Cl. 164-89.000.

Burnett, Lauren W.: *See—*
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Burnsdie, Charles H., to Phillips Petroleum Company. Propellant burning rate catalyst and method of propulsion. 3,753,348, Cl. 60-219.000.

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Burrell, Richard P.: *See—*
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Burrell, Wayne R.; and Burrell, Richard P., to Burrell Bros., Inc. Bracket for gas containers. 3,753,543, Cl. 248-313.000.

Burtis, Samuel O. Hydrofoil-shaped stabilizing or attitude-affecting means for boats. 3,753,415, Cl. 114-126.000.

Burton, Albert C.; and Pierpont, George C., to Armco Steel Corporation. Method and bath for treating titanium. 3,753,815, Cl. 156-6.000.

Burton, James R., to Texaco Inc. Grease thickened with synergistic proportions of bentonite clay and polyethylene. 3,753,906, Cl. 252-28.000.

Bushman, R. C.: *See—*
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Butler, Richard A., Jr.: *See—*
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Butler, Richard George. Selective chamber screw driver. 3,753,455, Cl. 145-63.000.

Calderon, Nissim; and Scott, Kenneth W., to Goodyear Tire & Rubber Company, The. Control of molecular weight and molecular weight distributions of unsaturated polymers. 3,754,046, Cl. 260-677.00r.

California Institute of Technology: *See—*
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Calor: *See—*
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Carrier Corporation: *See—*
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Carroll, David F., to TRW Inc. Nobel metals having a high emittance coating of iron titanate. 3,753,666, Cl. 29-195.000.

Carswell, Robert: *See—*
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Carter, Nick G.; and Moore, Charles C., III, to AMF Incorporated. Method and apparatus for correlating a pipeline inspection record to known external locations. 3,754,275, Cl. 346-1.000.

Cartledge, Thomas: *See—*
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Caruso, Paul J., to Itek Corporation. Image converter charging information of one frequency to another frequency. 3,754,144, Cl. 250-213.00r.

Casagrande, Bruno. Drive arrangement for telescopically arranged elements. 3,753,468, Cl. 173-44.000.

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Casse, Robert; Maitre, Bernard; Thomine-Desmazures, Claude; and Thouvenel, Gerard, to Electronique Marcel Dassault. Visual display device for radar system. 3,754,248, Cl. 343-5.00r.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
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Cassidy, Frank H.; and Garcia, Ramon, to Aerojet-General Corporation. Power fluid. 3,753,345, Cl. 60-36.000.

Casto, John P., to Textron Inc. Trenchduct connector units. 3,753,585, Cl. 287-189.36r.

Cates, Louis H.; Geffon, Stanley; and Geffon, Samuel Schwartz, Walter, to Enequist Chemical Co., Inc., The. Process for the electrodeposition of a colored nickel-tin alloy coating. 3,753,873, Cl. 204-43.000.

Cavamatic Limited: *See—*
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Cayuga Associates, Inc.: *See—*
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Celanese Corporation: *See—*
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Cella, John A.; and Schmitt, William H., to Alberto-Culver Company. Low calorie dry sweetener composition. 3,753,739, Cl. 99-141.00a.

Cement Marketing Company Limited, The: *See—*
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Ceniceros, Robert C. Education oral hygiene device for young children. 3,753,266, Cl. 15-10.000.

Centre Stephanois de Recherches Mecaniques Hydromechanique et Frottement: *See—*
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Chow, Allan Tit-Shing, to Du Pont de Nemours, E. I., and Company. Apparatus and method for detecting streaks in coated layers on a web. 3,754,146, Cl. 250-219.0df.

Christ, Charles. Process and apparatus for fermentation. 3,753,731, Cl. 99-103.000.

Christensen, Burton G.; Leanza, William J.; and Sarett, Lewis H., to Merck & Co., Inc. Phosphonic acid anti-fibrinolytic agents. 3,754,085, Cl. 424-211.000.

Christopher, Harold A.; Faires, Dorus E.; Fontanella, Ethel L.; and King, Randall N., to General Electric Company. Method of forming negative electrodes. 3,753,778, Cl. 136-24.000.

Church, Victor E., to Motorola, Inc. Record mechanism for tape player. 3,753,567, Cl. 274-4.00b.

Churchill, Bruce W.; Rakow, Brenda J.; and Bergy, Malcolm E., to Upjohn Company, The. Microbiological process for preparing aminoacids from 4-propyl-h-proline and trans-4-ethyl-h-proline. 3,753,859, Cl. 195-47.000.

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Clark, James M., to International Telephone and Telegraph Corporation. Frame synchronization system. 3,754,102, Cl. 179-15.0bs.

Clark, Robert O. Thermal motor and generator. 3,754,151, Cl. 290-1.000.

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Cline, Edward T., to Du Pont de Nemours, E. I., and Company. Light source comprising peraminoethylene on porous particulate supports. 3,753,919, Cl. 252-188.300.

Clinton, William P.; Kaplan, Joel R.; and Capasso, Philip J., to General Foods Corporation. Reducing bitterness perception of coffee beverages and products. 3,753,726, Cl. 99-65.000.

Coal Industry (Patents) Limited: *See—*
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Coast Marine & Industrial Supply Inc.: *See—*
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Coleman, H. Paris, to United States of America, Navy. Bi-static circularly symmetric retrodirective antenna. 3,754,257, Cl. 343-100.0td.

Coleman, H. Paris, to United States of America, Navy. Linear of planar retrodirective antenna system. 3,754,258, Cl. 343-100.0td.

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Collins, James T., to National Cash Register Company, The. Communications bridge for impedance matching of a plurality of lines. 3,754,196, Cl. 333-8.000.

Collins, William J. Device for sampling molten metal. 3,753,372, Cl. 73-354.000.

Compagnie Generale d'Automatisme: *See—*
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Corinthios, Michael J. G. High speed signal processor for vector transformation. 3,754,128, Cl. 235-156.000.

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Cre-Crose International, Inc.: *See—*
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Crescenzo, Frank G.: *See—*
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Crider, Ernest L. Automatic dispenser for toothpaste and the like. 3,753,516, Cl. 222-95.000.

Cristal, Edward G., to Stanford Research Institute. Meander-line impedance transformer. 3,754,197, Cl. 333-33.000.

Criswell, Richard L., to Afton, Eloff, Jr. Frame attachment for remotely positioned jacks. 3,753,550, Cl. 254-133.000.

Crocker, Henry Peter, to Reckitt & Colman Products Limited. Process for the nuclear chlorination of aromatic amines in the para position. 3,754,034, Cl. 260-578.000.

Cronin, Timothy Henry; Hammen, Philip Dietrich; Abushanab, Elie; and Abu El-Haj, Marwan Jawdat, to Pfizer, Chas., & Co., Inc. 3-Halomethyl-2-quinoxalinecarboxylic acid-1,4-dioxide esters and their cyclization products with amines. 3,753,987, Cl. 260-250.00.

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Curry, John Downing, to Procter & Gamble Company, The. Phenylbismuth bis(2-pyridinethiol 1-oxide). 3,753,990, Cl. 260-270.00r.

Curry, John J., to Phoenix Closures, Inc. Container and closure. 3,753,512, Cl. 220-43.00r.

Curtiss, Lawrence E., 33 1/3% to Hirschowitz, Basil I. and 33 1/3% to Peters, C. Wilbur. Method for forming glass fibers. 3,753,672, Cl. 65-3.000.

Cutler, Ivan B., to University of Utah. Production of silicon carbide from rice hulls. 3,754,076, Cl. 423-345.000.

Cyclops Corporation: *See—*
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Daitoku, Kouichi: *See—*
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Dale, Charles Harry, to East Moline Metal Products Company. Concrete-working machine with walking vibrators. 3,753,621, Cl. 404-116.000.

Dallet, Bernard: *See—*
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Danesi, Wilbert P.: *See—*
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Daniel, Roger P.; and Resh, Robert E., to Ford Motor Company. Crash dummy viscous neck. 3,753,301, Cl. 35-17.000.

Daniel, Roger P., to Ford Motor Company. Anthropomorphic test dummy torso. 3,753,302, Cl. 35-17.000.

Dardas, Richard B., to Pfizer Inc. Preservation of bovine stomachs for rennet extraction. 3,753,860, Cl. 195-65.000.

Daspit, John I.; Jackman, Robert W.; and Weber, Charles L., to Universal Signal Corporation. Frequency rate communication system. 3,754,101, Cl. 179-15.0fs.

Data Packaging Corporation: *See—*
Lyman, George F., 3,753,533.

David, Curt Ludwig, to Newall Engineering Company, Limited, The. Cam grinders. 3,753,321, Cl. 51-101.00r.

Davis, Harvey J., to M&D Enterprises, Inc. Protecting grain in storage areas by an oxychloride cementitious composition. 3,753,750, Cl. 106-106.000.

Davis, John David; and Atkins, Christopher Lee. Pneumatic valves. 3,753,447, Cl. 137-596.000.

De Ambri, Diamante: *See—*
Michellone, Giancarlo; Doano, Luigi; Peruglia, Marco; and De Ambri, Diamante, 3,753,598.

De Laval Turbine California, Inc.: *See—*
Bacchi, Ray M., 3,753,626.

de Meux, Patrick de Laage, to Lignes Telegraphiques et Telephoniques. Communication system using binary to multi-level and multi-level to binary coded pulse conversion. 3,754,237, Cl. 340-347.0dd.

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DeBolt, Harold E., to Avco Corporation. Localized heating filaments by induced currents. 3,754,112, Cl. 219-10.610.

Decca Limited: *See—*
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Dediej, Paul, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Sealing device for electrified particle accelerator. 3,754,156, Cl. 313-63.000.

Deering Milliken Research Corporation: *See—*
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Fauran, Claude P.; Douzon, Colette A.; Huguet, Gerhard J.; Raynaud, Guy M.; and Gouret, Claude J., 3,754,000.

Delay, Dennis G.; Parsons, Sherman R.; and Sterlacci, Robert A., to United States of America, Navy. Solid state instrument system for digital counting and continuously indicating count results. 3,754,121, Cl. 235-92.0ea.

Delfold Corporation: *See—*
Sheroff, Irving; and Berwanger, Howard W., 3,753,558.

Delignieres, Robert, to Institut Francais du Petrole des Carburants et Lubrifiants. Method for directly measuring the distance travelled over by a vehicle moving in a water body, with respect to the submerged ground surface and device therefor. 3,754,207, I. 340-3.00d.

DEMAG Aktiengesellschaft: *See—*
Wagener, Elmar; and Jansch, Frantisek, 3,753,793.

Demangeon, Yvon, to Colgate-Palmolive Company. Biological cleaning preparation. 3,753,915, Cl. 252-95.000.

Deming, Andrew F., to Alliance Manufacturing Company, The. Transmitter-receiver system. 3,754,187, Cl. 325-37.000.

Deming, Andrew F., to Alliance Manufacturing Company, Inc., The. Receiver decoder. 3,754,189, Cl. 325-392.000.

Demsey, John N., Jr.: *See—*
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Denekas, Milton O., to Esso Production Research Company. Method for controlling the viscosity of surfactant solutions. 3,753,465, Cl. 166-252.000.

Dennison, Joseph D.: *See—*
Melloy, George F.; and Dennison, Joseph D., 3,753,796.

Denver Wood Products Co.: *See—*
Nesbitt, George G., 3,753,323.

Derderian, Edward J.; and McGlashan, John P. Carton handling machine. 3,753,333, Cl. 53-186.000.

Dernovashek, Joseph F.; Birmingham, Peter D.; and Fuchs, Charles E., to Goodyear Tire & Rubber Company, The. Brake disc subassembly with segmented beryllium core. 3,753,476, Cl. 188-73.200.

Designed Mailing Accessories, Inc.: *See—*
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Desmeserets, Frank Pierre Antoine Villey: *See—*
Leneveu, Louis; and Desmeserets, Frank Pierre Antoine Villey, 3,753,810.

DeSota, Inc.: *See—*
Taubman, Charles M.; and Carabine, Annette M., 3,753,901.

Dessoris, Rene Alfred Francois. Continuous helical screw press. 3,753,399, Cl. 100-145.000.

Deutsche Gold- und Silver-Scheideanstalt vormals Roessler: *See—*
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Deutsche Gold- und Silver-Scheidenstalt vormals Roessler: *See—*
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DeVries, Louis; and Kennedy, Brian R., to Chevron Research Company. Oxidation inhibited lubricating oil compositions with extreme pressure properties. 3,753,908, Cl. 252-47.500.

DeVries, Louis, to Chevron Research Company. Novel reactions of HCN, HF and olefins. 3,754,018, Cl. 260-465.300.

Dexter, Martin; and Knell, Martin, to Ciba-Geigy Corporation. N, N'-Bis(3,5-di-t-butyl-4-hydroxyphenyl) adipamide. 3,754,031, Cl. 260-559.00a.

Diana, Guy D., to Sterling Drug Inc. 1,l'-azinolis(1,2,3,4-tetrahydroico quinalines). 3,753,994, Cl. 260-288.00r.

Dick, A. B., Company: *See—*
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Dienes-Honeywell-Holding GmbH: *See—*
Segelken, Rudolf; Tippmann, Oskar; and Westebbe, Peter, 3,753,463.

Dierolf, Arthur Jack, to United States of America, Navy. Dense propellant containing fluoropolymers and heavy metal component. 3,753,813, Cl. 149-19.000.

Diethelm, Hermann, to Ciba-Geigy AG. Process for the manufacture of new plasticised melamine-formaldehyde condensates. 3,753,934, Cl. 260-17.300.

Dietl, Wilhelm: *See—*
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Dietrich, Otmar Siegfried: *See—*
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Dillmann, Eugene Roland. Vehicle overturn preventer. 3,753,474, Cl. 180-104.000.

Dimomi, Masami. Method of making fungicidal substance against candida and candida-like, yeast-like fungi. 3,753,862, Cl. 195-96.000.

Dinapoli, Nicholas; Friedman, Donald; Nicholls, Robin P.; Wilcox, Howard A.; and Wood, Charles E., to Minicars, Inc. Mileage recording. 3,754,122, Cl. 235-92.0tn.

Dinkelbach, Anton: *See—*
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DiSalvo, Salvatore; and Guglielmiwo, Francesco, to Fiat Societa per Azioni. Lamp for illuminating rear license plates of motor vehicles. 3,754,131, Cl. 240-7.10g.

Diskin, Mordechai Haim: *See—*
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Doano, Luigi: *See—*
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Dobinson, Bryan; Massey, Derek James Rowland; Winterbottom, Kenneth; and Robinson, Brian, to Ciba-Geigy AG and I.W.S. Nominee Company, Limited. Treatment of keratinous fibres and fabrics. 3,753,649, Cl. 8-127.600.

Dohm, Daniel, Jr., to Cashin System Corporation, mesne. Meat press. 3,753,398, Cl. 100-53.000.

Domego, Edward: *See—*
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Donck, Harry A., to United Nuclear Corporation. Modular fuel rod spacer assembly for nuclear reactor fuel assemblies. 3,753,855, Cl. 176-78.000.

Donnarumma, Carmine; Farber, Harvey; Grimm, Charles H.; Kuramoto, Simpey; Marmo, Don; and Stein, Herbert S., to International Flavors & Fragrances, Inc. Process for flavoring rice, compositions used therewith, and products obtained thereby. 3,753,730, Cl. 9-83.000.

Dormehl, Erich; and Maas, Hans, to Geyligenstaedt & Company Werkgeugmaschinenfabrik G.m.b.H. Apparatus for adjusting the tools of a multi-spindle tool machine. 3,754,178, Cl. 318-572.000.

Dorn, Conrad P., Jr.: *See—*
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Dotson, William P., Jr., to United States of America, National Aeronautics and Space Administration. Digital to analog conversion apparatus. 3,754,236, Cl. 340-347.0da.

Douet, Philippe Yves Christian, to Centre Stephanois de Recherches Mecaniques Hydromechanique et Frottement. Method of treatment of metallic surfaces. 3,753,875, Cl. 204-56.00r.

Douros, John D., Jr.: *See—*
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Martin, Robert C., 3,753,748.
Nankee, Robert J.; and Carswell, Robert, 3,753,912.
Olstowski, Franciszek; and Parrish, Donald B., 3,753,933.
Spoelder, Johannes; and Schonbachler, Max, 3,753,917.
Thomas, Robert J., 3,753,947.
Tomalia, Donald A.; and Giacobbe, Thomas J., 3,754,032.

Downing, Harvey T.; Lawson, Charles V.; and Sturgis, Byron E., to Micromedic Systems, Inc. Automatic test tube transporter and sample dispenser having solid state controls. 3,753,657, Cl. 23-253.00r.

Dravo Corporation: *See—*
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Dressler, Robert L., to Dunlap Company Limited, The. Apparatus for positional control. 3,754,124, Cl. 235-151.110.

Drew, John; and Marks, Robert Elliott, to Envirotech Corporation, mesne. Centrifugal separation apparatus. 3,753,336, Cl. 55-242.000.

Driver, Wilbur B., Company: *See—*
Geissler, George N.; and Smith, Harry Clark, 3,753,817.

Du Pont de Nemours, E. I., and Company: *See—*
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Cline, Edward T., 3,753,919.
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Jenkins, Francis Edward, 3,753,932.

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Rothstein, Mark B., 3,754,125.

Dubouchet, Jacques L., to Societe Generale de Constructions Electriques et Mechaniquies (Alsthom). Automatic water gate installation. 3,753,353, Cl. 61-25.000.

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Duckworth, Michael: *See—*
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Duff, Raymond A. Cementatious material and constructions made therefrom. 3,753,849, Cl. 161-162.000.

Duling, Irl N.: *See—*
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Hood, Charles Reay; and Dulle, Bernard Allen, 3,753,437.

Dulpree, Hans-Werner. Apparatus for forming system components of extruded hollow chamber profiles. 3,753,640, Cl. 425-392.000.

Dummermuth, Ernst; and Walters, Ronnie G., to Allen-Bradley Company. Digital to analog converter. 3,754,235, Cl. 340-347.0da.

Duncan, Lenard J.: *See—*
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Dybwad, Jens P.; Alexander, Winser E.; and Zinnow, Karl P., to United States of America, Air Force. Light pressure operated microbalance system. 3,753,472, Cl. 177-210.000.

Dyer, Rex H.; and Burnett, Lauren W., to Dyer Weld Tool Corporation. Electrode tip extracting tool. 3,753,283, Cl. 29-267.000.

Dyer Weld Tool Corporation: *See—*
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Dymo Industries, Inc.: *See—*
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Dynamit Nobel AG: *See—*
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Ebbesen, Ejvind. Bifocal magnifying glass to be held in front of one eye. 3,753,611, Cl. 350-249.000.

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Edward & Scott, mesne: *See—*
Scott, Edward E.; and Sullivan, Maurice David, 3,754,119.

Edwards, Raymond Montague; and Tierney, Patrick Joseph. Thermoplastic sheet material. 3,753,938, Cl. 260-28.50d.

Eggertsen, Frank T., to Shell Oil Company. Method for determining organic materials in water. 3,753,654, Cl. 23-230.0pc.

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Ehrat, Kurt, to Gretag Aktiengesellschaft. Method of and apparatus for comparing one article with another similar article. 3,753,617, Cl. 356-71.000.

Ehrat, Kurt, to Ciba-Geigy AG. Rotor position selection mechanism. 3,754,242, Cl. 340-373.000.

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Eilers, George J., to Stanford Research Institute. Compound lens for converting the effect of large-area sonic transducer to one of small-area. 3,754,208, Cl. 340-8.001.

Eisenacher, Werner; and von Roda, Eckart, to Bosch, Robert, G.m.b.H. Separator for maintenance-free cells. 3,753,784, Cl. 136-145.000.

Eisenberg, Harold, to Webster Electric Company, Inc. Intrusion detection device utilizing low frequency sound waves and phase detection techniques. 3,754,222, Cl. 340-258.00a.

Eisner, Steve, to Norton Company. Multi-hardness electrodeposits. 3,753,871, Cl. 204-35.00r.

Eisner, Steve, to Norton Company. Vibratory apparatus. 3,753,889, Cl. 204-198.000.

Electrical Protection Co. (pty) Ltd.: *See—*
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Endo, Masayuki: *See—*
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Enochian, Samuel H., to Unarco Industries, Inc. Air manifold system for inflatable bulkheads. 3,753,414, Cl. 114-75.000.

Enrique, Bernal G., to Honeywell Inc. Optical polarization. 3,753,608, Cl. 350-150.000.

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Eppler, Daniel, to Thomas & Betts Corporation. Terminal forming and terminating apparatus. 3,753,279, Cl. 29-203.00d.

Ernst, Otto; Kusenberg, Eugen; Hubler, Ernst; and Hans-Rudolf, Reinach, to Ciba-Geigy AG. Process for impregnating bodies with a casting resin composition. 3,754,071, Cl. 264-272.000.

Erny, Daniel Richard; and Brandle, Merrill, to Van Dyk Research Corporation. Scanning apparatus. 3,753,615, Cl. 355-8.000.

Eskijian, Luther. Dustless sand blaster. 3,753,318, Cl. 51-11.000.

Espasa, Arcadio. Locking head. 3,753,570, Cl. 279-2.000.

Espy, Ronald H., to Armco Steel Corporation. Chromium-nickel-manganese-nitrogen austenitic stainless steel. 3,753,693, Cl. 75-128.00a.

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Fauran, Claude P.; Douzon, Colette A.; Huguet, Gerhard J.; Raynaud, Guy M.; and Gouret, Claude J., to Delalande S.A. Derivatives of 3-aminocarbonyl-2-oxazolidinone and their process of preparation. 3,754,000, Cl. 260-307.00c.
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Fischer, Paul W.; and Gallus, Julius P., to Union Oil Company of California. Well completion and workover fluid. 3,753,903, Cl. 252-8.50a.
Fitzgerald, James R.; and Beachem, Ronald G., to Incremental Systems, Inc. Apertured card reader and digital data collection system. 3,754,120, Cl. 235-61.11e.
Fitzgerald, William M. B., to Matthey, Johnson, and Mallory, Ltd. Fluid monitoring unit. 3,753,346, Cl. 60-547.000.
Flachbarth, Dieter; and Schwarz, Hermann, to Siemens Aktiengesellschaft. Electromagnetically actuated switching device having delayed dropout. 3,754,165, Cl. 317-141.00s.
Flickeitail Industries, Inc.: *See—*
Bjork, Gust H., 3,753,495.
Flicker, Howard D., to API Corporation. Diffusion coated metallic substrate. 3,753,668, Cl. 29-196.000.
FMC Corporation: *See—*
Fairbanks, Theodore H., 3,753,845.
Young, Sanford Tyler; and Hill, Kenneth Lee, 3,753,678.
Fogarty, John Edward; Odar, Stanley Paul; and Angerman, Glenn Donald, to Republic Steel Corporation. Non-ribbing ferritic steel and process. 3,753,788, Cl. 148-2.000.
Folkers, Karl; Boler, Jan B.; and Chang, Jaw-Kang, to Folkers, Karl, Dr. Method for synthesizing pyroglutamyl-histidyl-prolinamide. 3,753,969, Cl. 260-112.500.
Folkers, Karl, Dr.: *See—*
Folkers, Karl; Boler, Jan B.; and Chang, Jaw-Kang, 3,753,969.
Folkert, Henry. Steering system for trailers. 3,753,580, Cl. 280-443.000.
Follett, Paul S.: *See—*
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General, Norman T., 3,753,377.
Wilson, Raymond W., 3,753,467.
Forest, Charles D.; and Miller, Cecil G., Jr., to Du Pont de Nemours, E. I., and Company. Method of making spheroidal high explosive particles having microholes dispersed throughout. 3,754,061, Cl. 264-3.00d.
Forgione, Peter Salvatore, to American Cyanamid Company. Binding enzymes to carbonyl polymers. 3,753,861, Cl. 195-68.000.
Forseth, Glenn J.: *See—*
Henderson, Eulas W.; and Forseth, Glenn J., 3,753,658.
Foster, Frank Leach; and Hay, Peter, to Imperial Chemical Industries Limited. Oxidation process. 3,754,024, Cl. 260-531.00r.
Fowler, Lewis; and Trump, Walter N., to Monsanto Company. Recording of reciprocal of temperature. 3,753,369, Cl. 73-15.400.
Fox, Homer M.: *See—*
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Frackhauser, Francois Moisson: *See—*
Aupoin, Marcel; Frackhauser, Francois Moisson; and Royet, Jean, 3,754,095.
Francis, James O., to Texaco Inc. Separation process for high carbon number straight chain hydrocarbons by adsorption. 3,753,895, Cl. 208-310.000.
Franiau, Rene P., to S.A. PRB Societe Anonyme. Rust inhibitors containing tannings with a chelation catalyst and a cross linking agent. 3,753,924, Cl. 252-389.00r.
Franko, John; and Ryan, William J., to Leesona Corporation. Method of making zinc electrodes. 3,753,779, Cl. 136-31.000.
Fraser, Alfred M. Process for the production of a topographical map having a relief contour effect. 3,753,713, Cl. 96-41.000.
Frauchiger, Ulrich: *See—*
Gassmann, Hans Ulrich; and Frauchiger, Ulrich, 3,753,652.
Frazier, Thomas J. Method and apparatus for subsoil irrigation. 3,753,409, Cl. 111-6.000.
Freeman, Max. Plastic bag fabricating, dispensing and sealing unit. 3,753,829, Cl. 156-367.000.
French, Albert Graham, to Coal Industry (Patents) Limited. Rotary mining head with fluid connector means. 3,753,597, Cl. 299-81.000.
Frens, James A.: *See—*
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Frey, Max. Locking ski clamp. 3,753,359, Cl. 70-19.000.
Freyer, Walter; Gscheidmeier, Manfred; Holtermann, Rolf; and Wirtz, Rudolf, to Farbwerke Hoechst Aktiengesellschaft vormals Meister. Continuous process for the purification of monochloroacetic acid. 3,754,029, Cl. 260-539.00a.
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Fromme, Hans-Georg; and Lehberger, Erich, to Fa. Fromme, Wetzlar. Branching device and guide means for high-speed tray conveyors. 3,753,485, Cl. 198-31.0ac.
Fuchs, Charles E.: *See—*
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Fujie, Kuniyoshi; Kondo, Sadao; Hara, Kazuo; Okada, Yoshihiro; and Hayashi, Yoshitatsu, to Takeda Chemical Industries, Ltd. Stabilized composition for poultry and livestock containing a vitamin B compound and a macrolide antibiotic. 3,754,084, Cl. 424-181.00.

Fujikawa, Kanichi: *See*—
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Fujimura, Ikuo: *See*—
Sugiyama, Mitsunori; Fujimura, Ikuo; Takano, Masao; and Sonoda, Minoru, 3,753,714.

Fujisawa, Shokei, to Shionogi & Co., Ltd. Stable oily preparations of epithio-steroids. 3,754,086, Cl. 424-241.000.

Fujitsu Limited: *See*—
Uno, Tadakazu; Kataoka, Toichi; Suzuji, Noboru; Munetaka, Hisatomo; and Kutsukake, Shoichi, 3,754,127.

Fukuda, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Process for heat treatment of metallic strings for stringed instruments. 3,753,797, Cl. 148-131.000.

Fukushima, Osamu; and Sato, Masamichi, to Fuji Photo Film Co., Ltd. Electrophotographic liquid developing apparatus. 3,753,419, Cl. 118-637.000.

Fuller, Clyde R.: *See*—
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Fushiki, Isamu: *See*—
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Gaier, Claude E.; Grochowski, Edward G.; and Roy, Maurice M., to International Business Machines Corporation. Method for obtaining optimum phosphorous concentration in semiconductor wafers. 3,753,809, Cl 148-189.000.

Gaillard, Charles S., to Westvaco Corporation. Method for treating pulp digester blow gases. 3,753,851, Cl. 162-15.000.

Galbraith, Lyle D.; and Harvey, Alan R., to Rocket Research Corporation. Drip irrigation system. 3,753,527, Cl. 239-11.000.

Gallucci, Francis; and Wagner, George J. Jr., to United States Steel Corporation. Bending-roll unit for continuous-casting machine. 3,753,461, Cl. 164-282.000.

Gallus, Julius P.: *See*—
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Gammon, Fred. Golf accessory carrier. 3,753,519, Cl. 224-5.00c.

Garby, Louis C. Sequence indicating mechanism. 3,753,417, Cl. 116-121.000.

Garcia, Ramon: *See*—
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Garrett, Roscoe H., to Riley Company, The. Graphic display assembly. 3,754,244, Cl. 340-381.000.

Garrison, William H., to American Spin-A-Batch Company. Method of galvanizing. 3,753,762, Cl. 117-51.000.

Gasior, Joseph; and Pomper, Anthony W., to Midland-Ross Corporation. Cooled-cutter hot-die pelletizer. 3,753,637, Cl. 425-313.000.

Gassmann, Hans Ulrich; and Frauchiger, Ulrich, to Ciba-Geigy AG. Method of recording liquid flow over a solid surface. 3,753,652, Cl. 23-230.00r.

Gates Rubber Company, The: *See*—
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Gaudet, Peter W.: *See*—
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Gautschi, Fritz; Willhalm, Bruno; and Huchi, George Hermann, to Firmenich & Cie. Oxo-thia-bicyclo[3.3.0]octadienes as flavoring agents. 3,753,738, Cl. 99-140.00r.

Gavin, John Joseph; Walchli, Herman Henry, Jr.; and Stauffer, Dale Adrian, to Miles Laboratories, Inc. 3-Amino-flavanones. 3,753,985, Cl. 260-247.70s.

Gawlick, Heinz; and Marondel, Gunther, to Dynamit Nobel Aktiengesellschaft. Process for production of propellant charges comprising compressing geometrically shaped powders together. 3,754,060, Cl. 264-3.00c.

Gayner, Herbert; and Demsey, John N., Jr., to Aluminum Company of America. Laminated container wall structure. 3,753,847, Cl. 161-116.000.

Gebr. Eickhoff, Maschinenfabrik und Eisengeisserei m.b.H.: *See*—
Brandenburg, Helmut, 3,753,838.

Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See*—
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Geffon, Stanley: *See*—
Cates, Louis H.; Geffon, Stanley; and Geffon, Samuel Schwartz, Walter, 3,753,873.

Geissler, George N.; and Smith, Harry Clark, to Driver, Wilbur B., Company. Method for processing wire. 3,753,817, Cl. 156-18.000.

Gemmellaro, Carmelo, to FIAT Societa per Azioni. Automatic brake pressure control device for pneumatic anti-skid vehicle braking systems. 3,753,600, Cl. 303-21.00f.

General American Transportation Corporation: *See*—
Metzger, Willy; Ott, Rudi; Pappe, Gunter; and Schmidt, Helmut, 3,753,667.

General Battery Corporation: *See*—
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General Electric Company: *See*—
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Berner, Warren E., 3,753,289.
Christopher, Harold A.; Faires, Dorus E.; Fontanella, Ethel L.; and King, Randall N., 3,753,778.
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Holub, Fred F.; and Emerick, Carl M., 3,753,946.
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Walker, James L.; and Sawyer, Thomas F., 3,753,790.

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Kaplow, Milton; and Klose, Robert E., 3,753,734.

General Instrument Corporation: *See*—
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General Motors Corporation: *See*—
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General, Norman T., to Ford Motor Company. Automatic transmission shift control engine spark control. 3,753,377, Cl. 74-856.000.

General Refractories Company: *See*—
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Georgette, Nicholas J.: *See*—
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Gerkens, Dirk R. D'Arnaud, to Nibb-It Products Association Ltd. Method of making an expanded crisp snack food product. 3,753,735, Cl. 99-100.00p.

Gertsch, A.G.: *See*—
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Gertsch, Ernst; and Gertsch, Ulrich, to Gertsch, A.G. Safety ski binding. 3,753,571, Cl. 280-11.350.

Gertsch, Ulrich: *See*—
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Gesellschaft zur Forderung der Forschung an der Eidg. Techn Hochschule: *See*—
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Gevaudan Corporation: *See*—
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Gewertz, Harry R., to Intercraft Industries Corporation. Method of forming a decorative picture frame. 3,753,285, Cl. 29-425.000.

Geyligenstaedt & Company Werkgeugmaschinenfabrik G.m.b.H.: *See*—
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Giacobbe, Thomas J.: *See*—
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Gibbs, Gerald W., to Consolidated Foods Corporation. Lubrication system. 3,753,528, Cl. 239-61.000.

Giddings & Lewis, Inc.: *See*—
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Girault, Jean, to Thomson-CSF. Speed control system for hall effect motors. 3,754,175, Cl. 318-138.000.

Givaudan Corporation: *See*—
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Glacier Metal Company Limited, The: *See*—
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Glaser, Hermann: *See*—
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Glaverbel: *See*—
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Glavis, Frank J.; and Clemens, David H., to Rohm and Haas Company. Desalination process. 3,753,898, Cl. 210-33.000.

Gleason, Donald Hastings, to Reaction Instruments, Incorporated. Portable equipment security system. 3,754,225, Cl. 340-280.000.

Godel, Siegfried, to Sperry Rand Corporation. Hair roller appliance. 3,754,116, Cl. 219-222.000.

Godlewski, Joseph F., 1/2 to McMahon, Vincent K. Dual blade spatula. 3,753,587, Cl. 294-7.000.

Goerth, Helmut: *See*—
Sturm, Han-Juergen; and Goerth, Helmut, 3,753,991.

Goethert, Winfried H., to United States of America, Air Force. Laser doppler velocimeter detector. 3,753,616, Cl. 356-28.000.

Goffe, William L., to Xerox Corporation. Agglomeration imaging process using hardenable material. 3,753,705, Cl. 96-1.00r.

Goings, Robert: *See*—
Matson, James H.; and Goings, Robert, 3,753,656.

Golden, Eddie R. Wick-burning candle with multiple points of light emmission in its body. 3,753,643, Cl. 431-126.000.

Goldman, Leon: *See*—
Meyer, Walter Edward; and Goldman, Leon, 3,754,089.

Goldstone, Lenrod L.; and Cross, John H., to United Aircraft Corporation. Frequency independent non-resonant series fed slot antenna. 3,754,272, Cl. 343-778.000.

Goodrich, B. F., Company, The: *See—*
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Goodrich-Gulf Chemicals, Inc.: *See—*
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Goodyear Tire & Rubber Company, The: *See—*
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St. Cyr, David R., 3,753,961.

Gorman, John F. Vehicle safety device. 3,753,576, Cl. 280-150.0ab.

Gosger, Peter, to AEG-Elotherm G.m.b.H. Method of electrochemically machining titanium or titanium alloy workpieces. 3,753,878, Cl. 204-129.100.

Gothard, David Olen: *See—*
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Gould Inc.: *See—*
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Graae, Johan E. A.: *See—*
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Grace, W. R., & Co.: *See—*
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Kloczewski, Harold A.; Moyer, Joseph D.; and Kramm, David E., 3,753,720.
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Grachev, Vladimir Alexandrovich: *See—*
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Graff, Renier J. L.; and Marchal, Adrianus G., to Stamicarbon N.V. Process of preparing polymers of conjugated dienes. 3,753,967, Cl. 260-94.300.

Grafstrom, Stig Olof; and Blomovisi, Nils Verner, to Mo och Domsjo Aktiebolag. Apparatus for converting sheet cellulose pulp to defibrated pulp. 3,753,530, Cl. 241-34.000.

Graham, Charles H., to Anarak Incorporated. Coupling unit. 3,753,582, Cl. 285-305.000.

Graham Engineering Corporation: *See—*
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Waterloo, William C., 3,753,639.

Graham, Richard P.; and Schaeflern, Henry, to Singer Company, The. Regulator for cam controlled feed in sewing machine. 3,753,411, Cl. 112-210.000.

Gramatica, Giorgio: *See—*
Pagani, Giorgio; and Gramatica, Giorgio, 3,753,662.

Grantham, Le Roy F., to North American Rockwell Corporation. Removal of nitrogen oxides and other impurities from gaseous mixtures. 3,754,074, Cl. 423-210.500.

Graser, Fritz, to Badische Anilin & Soda-Fabrik Aktiengesellschaft. Dyes of the pyrathrone series. 3,754,008, Cl. 260-360.000.

Grass, George M., Jr.; and Unangst, Raymond R., to Smith Kline & French Laboratories. Process for preparing polyhalohemiacetal derivatives of polysaccharides. 3,753,976, Cl. 260-233.30a.

Graven, Richard G.; and Heinemann, Heinz, to Mobil Oil Corporation. Split-stream reforming to upgrade-low-octane hydrocarbons. 3,753,891, Cl. 208-62.000.

Grayson, Martin, to American Cyanamid Company. Tertiary organophosphines. 3,754,035, Cl. 260-584.00r.

Greenly, George D.: *See—*
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Grenfell, Julian Pascoe; and Buchanan, John Brown, to Badalex Limited. Handling and sorting devices. 3,753,513, Cl. 221-1.000.

Grenier, George H. Scalp relaxation pillow. 3,753,264, Cl. 5-338.000.

Gretag Aktiengesellschaft: *See—*
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Vogt, Horst Dieter; and Schnellmann, Oskar, 3,753,486.

Griffiths, Leonard B., to Mallory, P. R., & Co., Inc. Method of making nickel-chromium-beryllium alloy. 3,753,800, Cl. 148-162.000.

Griggs, Bruce, to United States of America, Atomic Energy Commission. Process for providing a hydride-free and oxide-free surface on zirconium and zirconium-alloy bodies. 3,753,883, Cl. 204-144.500.

Grimm, Charles H.: *See—*
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Grob & Co., Aktiengesellschaft: *See—*
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Grochowski, Edward G.: *See—*
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Grover, Kenneth M.; Knecht, George B.; and Tully, John J., to Dorr-Oliver Incorporated. Process for extracting copper from sulfide ores. 3,753,691, Cl. 75-101.00r.

Grueber, Randall A.; and Warren, Robert A., to McDonnell Douglas Corporation. Cargo roller assembly. 3,753,541, Cl. 244-137.00r.

Grunau, Dietrich: *See—*
Lamor, Kurt; Grunau, Dietrich; and Tarani, Gustav, 3,753,572.

Gscheidmeier, Manfred: *See—*
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Guerra, Lois A. Hypodermic syringe for blood tests. 3,753,432, Cl. 128-2.00f.

Guglielmiwo, Francesco: *See—*
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Guillet, James Edwin, to University of Toronto, Governors of the. Photodegradable composition. 3,753,952, Cl. 260-63.00r.

Gulton Industries, Inc.: *See—*
Webb, Winfield Scott, 3,753,787.

Gum, Wilson F., Jr.; and Nelson, David A., to Dow Chemical Company, The. Halonitromethyl cycloalkanes. 3,754,042, Cl. 260-644.000.

Gunson's Colorplugs Limited: *See—*
Swithenbank, Joshua; Taylor, David Shaw; and Bulion, Michael Stuart, 3,754,139.

Gut, Jurgen; and Spreitzhofer, Ernst, to Bodenseewerk Perkin-Elmer & Co., G.m.b.H. Circuit arrangement for baseline compensation. 3,754,232, Cl. 340-347.0ad.

Gutjahr, Manfred: *See—*
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Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. Process and intermediates for quinine, quinidine and derivatives thereof. 3,753,992, Cl. 260-284.000.

Gwilliam, Ralph Derek, to English Clays Lovering Pochin & Company Limited. Tube pressure filters. 3,753,498, Cl. 210-350.000.

Gwilliam, Ralph Derek, to English Clays Lovering Pochin & Company Limited. Tube pressure filters. 3,753,499, Cl. 210-350.000.

Hachmann, Klaus: *See—*
Berth, Peter; Bellinger, Horst; and Hachmann, Klaus, 3,753,914.

Haede, Werner; Fritsch, Werner; Radscheit, Kurt; and Stache, Ulrich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of 14-anhydrobufaline. 3,753,980, Cl. 260-239.570.

Haefner, John A., to Eastman Kodak Company. Photographic diffusion transfer product and process. 3,753,764, Cl. 117-68.000.

Haglund, Bernard F.; and Salvarezza, Robert N., to Coast Marine & Industrial Supply Inc. Rat guard. 3,753,416, Cl. 114-211.00r.

Hahn, Erwin: *See—*
Adelsberger, Klaus; Hahn, Erwin; and Scheuermann, Horst, 3,753,978.

Hahn, Winfried, to Holstein & Kappert Maschinenfabrik Phonix GmbH. Multiple bottle gripper. 3,753,589, Cl. 294-87.00r.

Haidvogel, Dieter, to Steyr-Daimler-Ruck Aktiengesellschaft. Method and apparatus for supplying gaseous and liquid fuels to a dual-fuel engine. 3,753,424, Cl. 123-27.0ge.

Haley, Floyd C., to Ultra-Violet Products, Inc. Monochromator. 3,753,618, Cl. 356-100.000.

Halley, James L., to Tesco Chemicals, Inc. Water treatment composition including synthetic wax. 3,753,676, Cl. 71-67.000.

Hamada, Hisawaki: *See—*
Ueno, Haruo; Ishikawa, Hideo; Hamada, Hisawaki; Watanabe, Takashi; and Imamura, Kunio, 3,753,943.

Hamaguchi, Hachiro; Sakashita, Misao; and Koyama, Mamoru, to Tatsuta Electric Wire & Cable Co., Ltd. Solder coated wire. 3,753,278, Cl. 29-197.000.

Hammen, Philip Dietrich: *See—*
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Hargreaves, Chester Arthur, II; and Piasecyznski, Stanley James, to Du Pont de Nemours, E. I., and Company. Dehydrohalogenation of halogenated compounds. 3,754,044, Cl. 260-654.00d.

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Hayashi, Hideo; and Sato, Hisatake, to Nippon Petrochemical Co., Ltd. Process for producing high softening point aromatic hydrocarbon resin having good solubility. 3,753,963, Cl. 260-82.000.

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Haylock, John Christopher; and Wagner, John Walter, to Allied Chemical Corporation. Control of viscosity and polycaproamide degradation during vacuum polycondensation. 3,753,955, Cl. 260-78.001.

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Hosono, Shinichi; and Kida, Kazuyoshi, to Teijin Limited. Let-off motion in loom. 3,753,451, Cl. 139-110.000.

Hough, Harold L.; Audesse, Emery G.; and Hay, Warren H., to GTE Sylvania Incorporated. Percussive photoflash lamp array with selective actuating mechanism. 3,753,390, Cl. 95-11.00r.

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Kober, Ehrenfried H.; Kraiburg, Aschau B.; and Martin, Richard H., to Olin Corporation. Vapor phase reaction of aromatic nitro compounds to form aromatic isocyanates. 3,754,014, Cl. 260-453.0pc.

Kober, Harald, to Siempelkamp, G., & Co. Method of making laminated asbestos cement plates. 3,753,827, Cl. 156-307.000.

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Koch, Ronald W., to Procter & Gamble Company, The. Bottle uncaser-single liner. 3,753,509, Cl. 214-309.000.

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Koziol, Walter, to Beatrice Foods Co. Cooking device. 3,753,396, Cl. 99-450.000.

Koziol, Walter, to Beatrice Foods Co. Gas supply unit for portable grill. 3,753,431, Cl. 126-38.000.

Kracklauer, John J., to Syntex Corporation. Dicyclopentadienyl iron compositions and methods for curing polyester resins. 3,753,927, Cl. 252-428.000.

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Kreitz, Walter; Blossfeld, Lothar; and Dietrich, Otmar Siegfried, to ITT Industries, Inc. Monolithic integrable constant current source for transistors connected as current stabilizing elements. 3,754,181, Cl. 323-1.000.

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Kunii, Daizo: *See—*
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Lindstrom, Nils Folke, to Boliden Aktiebolag. Elimination of floating slime during electrolytic refining of copper. 3,753,877, Cl. 204-106.000.

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Membrino, Hercules. Bag forming, filling and sealing method and apparatus. 3,753,332, Cl. 53-183.000.
Memorex Corporation: *See—*
Hulse, Lauren L.; Carlton, William K.; and Tanck, Elinor J., 3,753,909.
Memorex Corporation, mesne: *See—*
Lundquist, Ingemar H.; and Pastrone, John, 3,753,483.
Mendelson, Ralph A.: *See—*
Anderson, Wallace T., Jr.; and Mendelson, Ralph A., 3,753,699.
Anderson, Wallace T., Jr.; and Mendelson, Ralph A., 3,753,701.
Menichelli, Vincent J., to United States of America, Navy. Static discharge for electro-explosive devices. 3,753,403, Cl. 102-28.00r.
Menz, Fred L.; and Osburn, Michael R., to United States of America, Navy. Explosive and/NAND logic element. 3,753,402, Cl. 102-22.000.
Meranda, James I.: *See—*
Poppe, Martin C., Jr.; Beukers, John M.; Meranda, James I.; and Williams, Christian B., 3,754,260.
Merch & Co., Inc.: *See—*
Arth, Glen E.; and Rasmusson, Gary H., 3,753,979.
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Brooshok, Melvin J., 3,753,732.
Christensen, Burton G.; Leanza, William J.; and Sarett, Lewis H., 3,754,085.
Sarett, Lewis H.; and Hannah, John, 3,754,019.
Shen, Tsung-Ying; and Dorn, Conrad P., Jr., 3,754,892.
Witzel, Bruce E., 3,754,088.
Merck, James K., to Maremont Corporation. Spindle-drive assembly for textile spinning machines. 3,753,344, Cl. 57-105.000.
Merkley, Zane W.: *See—*
Hancock, Bruce Jay; Johnson, Don E.; and Merkley, Zane W., 3,754,147.
Mesey, Milton, to Maag Gear Wheel & Machine Company, Limited. Control of tooth flank grinding machines for helical gears. 3,753,319, Cl. 51-42.000.
Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Kappa, Gunther; and Schmidt, Helmut, 3,753,537.
Metzger, Karl Georg: *See—*
Ley, Kurt; Eholzer, Ulrich; Nast, Roland; Metzger, Karl Georg; and Fritsche, Dieter, 3,754,087.
Metzger, Willy; Ott, Rudi; Pappe, Gunter; and Schmidt, Helmut, to General American Transportation Corporation. Articles having electroless metal coatings incorporating wear-resisting particles therein. 3,753,667, Cl. 29-195.000.
Meyer, Joachin, to Frisch Kabel- und Verseilmaschinenbau GmbH. Method and apparatus for storing elongated material. 3,753,532, Cl. 242-83.000.
Meyer, Walter Edward; and Goldman, Leon, to American Cyanamid Company. Method of inhibiting fertility in female mammals. 3,754,089, Cl. 424-274.000.
Meyer-Simon, Eugen: *See—*
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Meyers, Bette C.: *See—*
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Meyers, Robert C.: *See—*
Julian, Elmo C.; Crescenzo, Frank G.; and Meyers, Robert C., 3,753,811.
Michellone, Giancarlo; Doano, Luigi; Peruglia, Marco; and De Ambri, Diamante, to FIAT Societa per Azioni. Hydraulic antiskid vehicle braking system, having two modes of operation. 3,753,598, Cl. 303-21.00f.
Michellone, Giancarlo; Peruglia, Marco; and Moretti, Turini Renzo Fiat FIAT Societe per Azioni. Pneumatic anti-skid vehicle braking system, having two modes of operation. 3,753,599, Cl. 303-21.00f.
Micromedic Systems, Inc.: *See—*
Downing, Harvey T.; Lawson, Charles V.; and Sturgis, Byron E., 3,753,657.
Microwave and Electronic Systems Limited: *See—*
Jinman, Michael, 3,754,254.
Midland-Ross Corporation: *See—*
Gasior, Joseph; and Pomper, Anthony W., 3,753,637.
Miessen, Jacques M. M.: *See—*
Duyverman, Coenraad J.; and Miessen, Jacques M. M., 3,754,050.
Mihalcheon, Arthur: *See—*
Sherratt, Jack, 3,753,338.
Milburn-Bathgate, Charles, to Cavamatic Limited. Universal couplings and chains incorporating such couplings. 3,753,487, Cl. 198-177.00r.
Milchem Incorporated: *See—*
Browning, William C.; and Chesser, Billy G., 3,753,971.
Miles Laboratories, Inc.: *See—*
Gavin, John Joseph; Walchli, Herman Henry, Jr.; and Stauffer, Dale Adrian, 3,753,985.
Milewski, Victor: *See—*
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Miller Brothers: *See—*
Miller, Norman K., 3,754,176.
Miller, Cecil G., Jr.: *See—*
Forest, Charles D.; and Miller, Cecil G., Jr., 3,754,061.
Miller, Frank E., to Whirlpool Corporation. Refuse compactor support means. 3,753,400, Cl. 100-100.000.
Miller, Harold C., to Super-Cut, Inc. Drill shank and chuck assembly for a drill press. 3,753,622, Cl. 408-59.000.
Miller, Lester I., to Du Pont de Nemours, E. I., and Company. Non-yellowing acrylic enamel containing an acid phosphate catalyst. 3,753,935, Cl. 260-22.0ca.
Miller, Norman K., to Miller Brothers. Electric circuit for a safety door edge. 3,754,176, Cl. 318-266.000.
Millikan, Allan G.; and Brizee, Mary Jane W., to Eastman Kodak Company. Photographic materials. 3,753,721, Cl. 96-130.000.
Millmaster Onyx Corporation: *See—*
Shay, Edward Griffin; Wakeman, Reginald L.; and Petrocci, Alfonso N., 3,754,033.
Mills, Archie W. Pump. 3,753,632, Cl. 417-520.000.

Milton, James E., to International Business Machines Corporation. Gain decision logic for integrating analog-to-digital converters. 3,754,240, Cl. 340-347.0nt.

Minemura, Norihiro: *See—*
Shimauchi, Shiro; Minemura, Norihiro; Matsui, Takeshi; Ito, Kenji; Shima, Takeo; and Kawase, Shoji, 3,753,650.

Minicars, Inc.: *See—*
Dinapoli, Nicholas; Friedman, Donald; Nicholls, Robin P.; Wilcox, Howard A.; and Wood, Charles E., 3,754,122.

Minnesota Mining and Manufacturing Company: *See—*
Stivers, David A., 3,753,937.
Voegeli, Douglas W., 3,753,500.

Minnesota Mining and Manufacturing Corporation: *See—*
Olson, Melvin M., 3,753,755.

Minnick, Leonard John, to IU Conversion Systems, Inc., mesne. In-situ treatment of roadway. 3,753,620, Cl. 404-76.000.

Minsk, Louis M.: *See—*
Tuites, Richard C.; Whiteley, Thomas E.; and Minsk, Louis M., 3,753,956.

Mishima, Yoshitsugu: *See—*
Shibata, Motonobu; and Mishima, Yoshitsugu, 3,753,696.

Missel, Leo, to International Business Machines Corporation. Method for converting aluminum and aluminum base, and copper base material surfaces from a hydrophobic to a hydraphilic state. 3,753,882, Cl. 204-140.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Takeichi, Yoshihiro; Hashimoto, Tsutomu; and Takeda, Fumio, 3,754,273.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
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Mitsubishi Rayon Company Limited: *See—*
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Mitsuhashi, Yoshinaga; and Kojima, Motoki, to Konishiroku Photo Industry Co., Ltd. Electrophotographic dry toner. 3,753,910, Cl. 252-62.100.

Mitsui Petrochemical Industries, Ltd.: *See—*
Ohmori, Masahiko; Tomatu, Toshiharu; Iwata, Tadao; and Sasaki, Juntaro, 3,753,954.

Mitsuyasu, Tetsuo; Ohno, Kiyotaka; and Tsuji, Jiro, to Toyo Rayon Company, Ltd. Long chain unsaturated nitro compounds. 3,754,041, Cl. 260-644.000.

Miyazaki, Kenichi, to Janome Sewing Machine Co., Ltd. Supporting housing assembly for a printing machine. 3,753,401, Cl. 101-45.000.

Miyazawa, Kaichiro: *See—*
Sugahara, Yujiro; Miyazawa, Kaichiro; Nakazawa, Tadahisa; and Maeno, Masahiro, 3,753,761.

Miyoshi, Mituji; and Matsuura, Kazuo, to Nippon Oil Company, Limited. Method for producing alternative copolymers containing little gel of a conjugated vinyl compound and a conjugated diene. 3,753,951, Cl. 260-63.0bb.

Mizuno, Komei: *See—*
Shibata, Motoo; Iwasa, Takashi; Yamamoto, Hiroichi; Asai, Mitsuko; and Mizuno, Komei, 3,754,083.

Mizusawa Kagaku Kogyo Kabushiki Kaisha: *See—*
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Mo och Domsjo Aktiebolag: *See—*
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Mobil Oil Corporation: *See—*
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Lee, Woodyoung; Long, Bernard C.; and Weekman, Vern W., Jr., 3,753,893.
Steiner, Robert H., 3,753,769.

Molina, Orlando G., to North American Rockwell Corporation. Liquid oxygen compatible dye penetrant method for metal defect inspection. 3,753,647, Cl. 8-85.000.

Molins, Desmond Walter; and Preston, Edward George, to Molins Limited. Cut-off devices for continuous rod cigarette-making machines and other similar machines. 3,753,379, Cl. 83-174.000.

Molins Limited: *See—*
Molins, Desmond Walter; and Preston, Edward George, 3,753,379.

Molloy, Kenneth H.; Ward, John P.; and Benson, Victor Mark, to Computer Systems Engineering, Inc. Traffic signal control system. 3,754,209, Cl. 340-41.000.

Mollura, Carlos A. Method of making tubular flexible bag with lap welded ends. 3,753,819, Cl. 156-69.000.

Monks, David E., to Eastman Kodak Company. Battery contact wiper for cameras. 3,753,389, Cl. 95-11.000.

Monostruct Corporation Limited: *See—*
Hutchison, David John, 3,753,843.

Monsanto Company: *See—*
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Weingarten, Harold I., 3,754,013.

Montecatini Edison S.p.A.: *See—*
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Sperandio, Claudio; Boscolo, Carlo; Jaderosa, Vittorio; and Savino, Antonio, 3,754,080.

Moore, Alvin Edward. Ballooned, VTOL aircraft. 3,753,539, Cl. 244-5.000.

Moore, Charles C., III: *See—*
Carter, Nick G.; and Moore, Charles C., III, 3,754,275.

Moore, Gerling, Inc., mesne: *See—*
Jurgensen, Peter D., 3,754,111.

Moore, Marvin D. Process for the removal of sulphate from brines. 3,753,900, Cl. 210-45.000.

Moore Products Co.: *See—*
Adams, Robert B., 3,754,201.

Moore, Raymond L., to Summit Hill Laboratories. Sterilized glyceryl guaiacolate powder and process for manufacturing same. 3,754,040, Cl. 260-613.00d.

Moran, Edward E.; and Wine, Jeffrey J., to PPG Industries, Inc. Poly (vinyliedne fluoride) compositions. 3,753,942, Cl. 260-30.200.

Morello, Edwin F., to Standard Oil Company. Composition and process for producing polyamideimide and polyamide polymers. 3,753,998, Cl. 260-30.20r.

Moretti, Turini Renzo Fiat FIAT Societe per Azioni: *See—*
Michellone, Giancarlo; Peruglia, Marco; and Moretti, Turini Renzo Fiat FIAT Societe per Azioni, 3,753,599.

Mori, Kiroyuki: *See—*
Shigezane, Kenji; Nishiyama, Ryuzo; Fujikawa, Kanichi; and Mori, Kiroyuki, 3,754,093.

Moriyama, Kouji: *See—*
Tajima, Osamu; Moriyama, Kouji; and Kunii, Daizo, 3,753,685.

Morris, David; and Conti, Donald, to Litton Business Systems Inc. Switching voltage regulator with input for voltage and output voltage detectors. 3,754,182, Cl. 323-17.000.

Morris, Victor William, to Imperial Chemical Industries, Limited. Condensation of halohydrocarbons. 3,753,335, Cl. 55-29.000.

Morroni, Richard J.: *See—*
Morroni, Thomas J.; and Morroni, Richard J., 3,754,213.

Morroni, Thomas J.; and Morroni, Richard J. Electronic combination lock system. 3,754,213, Cl. 340-147.0md.

Morse, Leighton L., to United States of America, Navy. High resolution recorder. 3,754,282, Cl. 346-139.00c.

Mosley, Kenneth C. Orrery projection and drive. 3,753,300, Cl. 35-42.500.

Motorola, Inc.: *See—*
Adamic, Joseph W., Jr., 3,753,806.
Bliven, Thomas G.; and Hugill, John R., 3,753,634.
Church, Victor E., 3,753,567.
Dunn, Thomas A.; and Fant, Arthur V., 3,754,070.

Moulin, Jean; and Dallet, Bernard, to Societe de Traitement Electrolytiques et Electrothermiques (Stel). Brazing press particularly for brazing a pressing including curved portions to a matching plate. 3,754,109, Cl. 219-9.500.

Moulinex S.A.: *See—*
Mantelet, Jean, 3,753,297.

Mowrey, Albert V., to General Instrument Corporation. Carry case for magnetic discs. 3,753,490, Cl. 206-62.00p.

Moyer, Joseph D.: *See—*
Kloczewski, Harold A.; Moyer, Joseph D.; and Kramm, David E., 3,753,720.

MSL Industries, Inc.: *See—*
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Mueh, Alfred E., to Tempo Communications, Inc. Advertising sheet carrier. 3,753,305, Cl. 40-125.00r.

Mueller, Gerhard; and Raffenberg, Hermann-Josef, to BASF Wyandotte Corporation. Apparatus for making polyurethanes. 3,753,554, Cl. 259-8.000.

Muller, Gerhard. Cableway arrangement. 3,753,406, Cl. 104-112.000.

Muller, Norbert G.: *See—*
Krauth, Horst Axel Karl; Muller, Norbert G.; Wolfgang, Bei Hanau; and Himmelstein, Paul R., 3,753,854.

Muller, Peter, mesne: *See—*
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Musha, Toshimitsu: *See—*
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Mutter, William W.: *See—*
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Myers, Robert R.; deceased (by Meyers, Helen T.; executor). Selective destruction of bacteria. 3,753,886, Cl. 204-186.000.

Nadella: *See—*
Pitner, Alfred, 3,753,277.

Nael, Albert: *See—*
Turpin, Pierre; and Nael, Albert, 3,753,317.

Nagai, Yoshibaru: *See—*
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Nageli, Peter, to Givaudan Corporation. Bicyclic ethers of the cyclododecane series. 3,754,039, Cl. 260-611.00f.

Nagle, Frederick P.: *See—*
Bell, Noel J.; Cooper, Ronald J.; Nagle, Frederick P.; Newlin, Frank A., III; and Stadler, William M., 3,754,217.

Naguet, Pierre. Apparatus for selectively dispensing articles stored in a plurality of containers. 3,753,514, Cl. 221-129.000.

Nahmias, Andre; Lucas, Georges; Kern, Rene; and Poulain, Claude, to Societe Anonyme dite: Aquitaine Total Organico. Process for the photosynthesis of hydrochlorates of cycloalkanone oximes. 3,753,884, Cl. 204-162.0xw.

Naito, Shun-Ichi. Derivatives of 4-(aminoethanesulfonylamino)-phenetidine. 3,753,996, Cl. 260-294.80f.

Naito, Yoshiyuki: *See*—
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Nakagawa, Yoshio: *See*—
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Nakazawa, Tadahisa: *See*—
Sugahara, Yujiro; Miyazawa, Kaichiro; Nakazawa, Tadahisa; and Maeno, Masahiro, 3,753,761.

Nankee, Robert J.; and Carswell, Robert, to Dow Chemical Company, The. Functional fluids containing morpholine-initated polyglycol corrosion inhibitors. 3,753,912, Cl. 252-77.000.

Nannini, Luciano: *See*—
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Nast, Roland: *See*—
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National Starch and Chemical Corporation: *See*—
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National Steel Corporation: *See*—
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Nawa, Yuzo: *See*—
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Naylor, Geoffrey; and Warne, Harold Sydney, to Scragg, Ernest, & Sons, Limited. Apparatus for false-twisting yarn. 3,753,343, Cl. 57-77.450.

NcNally, Paul F., to Phillips Petroleum Company. Perforate conduit. 3,753,352, Cl. 61-10.000.

Neeff, Rutger; and Kuth, Robert, to Bayer Aktiengesellschaft. Process for the continuous dyeing of synthetic fibre materials. 3,753,644, Cl. 8-25.000.

Neeff, Rutger; Wegner, Peter; Hederich, Volker; and Kuth, Robert, to Bayer Aktiengesellschaft. Continuous dyeing of polyester fibers with water-immiscible halogenated hydrocarbons and amino anthraquinone dyestuffs. 3,753,645, Cl. 8-39.000.

Negus, George T.: *See*—
Coons, William F.; Negus, George T.; and Tegra, Patrick A., 3,753,515.

Nelson, David A.: *See*—
Gum, Wilson F., Jr.; and Nelson, David A., 3,754,042.

Nelson, Henry A.; and Straslicka, William A., to Carrier Corporation. Turbine inlet valve structure. 3,753,449, Cl. 137-630.190.

Nelson, Richard B. Grounding plug. 3,754,202, Cl. 339-14.00r.

Nesbitt, George G., to Denver Wood Products Co. Skirting for mobile homes. 3,753,323, Cl. 52-169.000.

New York University: *See*—
Youdin, Myron; and Riech, Theobald, 3,754,133.

Newall Engineering Company, Limited, The: *See*—
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Newlin, Frank A., III: *See*—
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Nibb-It Products Association Ltd.: *See*—
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Niesen, George P.; and Domego, Edward, to Dick, A. B., Company. Liquid developer system for electrostatic copier. 3,753,393, Cl. 95-94.00r.

Nihon Tokushu Noyaku Seizo Kabushiki Kaisha: *See*—
Kishino, Shigeo; Yamada, Yasuo; Kudamatsu, Kawasaki; Sumi, Shozo; and Shiokawa, Kozo, 3,754,058.

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Nippon Crucible Co., Ltd.: *See*—
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Nippon Electric Co., Ltd.: *See*—
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Nippon Electric Company, Limited: *See*—
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Nippon Kokan Kabushiki Kaisha: *See*—
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Nippon Oil Company, Limited: *See*—
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Nippon Petrochemical Co., Ltd.: *See*—
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Nippon Selfoc Kabushiki Kaisha (a/k/a Nippon Selfoc Co., Ltd.: *See*—
Kitano, Ichiro; Koizumi, Ken; and Matsumura, Hiroyoshi, 3,753,607.

Nippon Telegraph & Telephone Public Corporation: *See*—
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Nippon Tungsten Company, Ltd.: *See*—
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Nissan Motor Company, Limited: *See*—
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Nitz, Rolf-Eberhard: *See*—
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Nix, William R. Door jamb jig. 3,753,556, Cl. 269-97.000.

Noguchi, Eiji: *See*—
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Noguchi, Masaru, to Alps Motorola, Inc. Solenoid. 3,754,167, Cl. 317-151.000.

Nolan, Jackie L.: *See*—
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Noltzel, Siegfried; and Fischer, Edgar, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Novel daylight fluorescent pigments and process for preparing them. 3,753,921, Cl. 252-301.20r.

Nomura, Masayoshi; Saida, Hiroji; Shimura, Yoshio; Sano, Hisumi; and Ono, Yuichi, to Hitachi, Ltd. Method of dividing semiconductor layer into a plurality of isolated regions. 3,753,803, Cl. 148-175.000.

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Eisner, Steve, 3,753,889.

Nott, Peter T. M., to Rotork Limited. Reversible hydraulic actuator with selectable fail-safe operation. 3,753,350, Cl. 606-403.000.

NUKEM, Nuklear-Chemie und- Metallurgie Gesellshcaft mit beschrankter Haftung: *See*—
Krauth, Horst Axel Karl; Muller, Norbert G.; Wolfgang, Bei Hanau; and Himmelstein, Paul R., 3,753,854.

Numata, Mitsuhiro: *See*—
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Nye, Glenn R., to Space Electronics, Inc. Security system for preventing unauthorized use of electric circuits. 3,754,148, Cl. 307-10.0at.

Nystrom, William A., to Stackpole Carbon Company. Jamming electronic wave-form information devices. 3,754,256, Cl. 343-18.00e.

Oas, Egil. Saw-grinder combination for thin rock section machines. 3,753,430, Cl. 125-14.000.

Obeissart, Albert, to Souriau & Cie. Electrical connectors. 3,754,206, Cl. 339-90.00r.

Oberhansli, Peter, to Givaudan Corporation. Noval cycloalkenone esters. 3,754,016, Cl. 260-408.00k.

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Ogino, Katsuhiko; and Inoue, Masahiro, to Takeda Chemical Industries, Ltd. Method for purification of isoprene. 3,754,049, Cl. 260-681.50r.
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Ohmori, Masahiko; Tomatu, Toshiharu; Iwata, Tadao; and Sasaki, Juntaro, to Mitsui Petrochemical Industries, Ltd. Novel copolymers and process for their production. 3,753,954, Cl. 260-78.40d.
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Olson, Donald R.; and Kiely, Daniel, to United States of America, Navy. Chemical reactor boiler assembly. 3,753,423, Cl. 122-248.000.
Olson, Melvin M., to Minnesota Mining and Manufacturing Corporation. Sheet material coated with heat hardenable tacky adhesive. 3,753,755, Cl. 117-3.100.
Olstowski, Franciszek; and Parrish, Donald B., to Dow Chemical Company, The. Polyurethane foams from solid foaming agents. 3,753,933, Cl. 260-2.5ae.
Ono, Nobutaka; and Nagai, Yoshibaru, to Osaka Bobbin Kabushiki Kaisha. Resiliently compressible bobbin made of plastic material. 3,753,534, Cl. 242-118.011.
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Orbon, Jacob J., Sr., to Bethlehem Steel Corporation. Method of providing metal slabs from a metal production facility. 3,753,288, Cl. 29-527.700.
O'Reilly, Royal V., to Lectron Corporation. Solid state controller. 3,754,177, Cl. 318-480.000.
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Pacini, Pier Luigi; and Kleiner, Eduard Karl, to Ciba-Geigy Corporation. Polymers of 5-(3-perfluoroalkyl-1,2,4-oxadiazolyl)olefins. 3,754,057, Cl. 260-901.000.
Pagani, Giorgio; and Gramatica, Giorgio, to Montecatini Edison S.p.A. Synthesis reactor with particular cooling means for exothermic reactions at high pressure. 3,753,662, Cl. 23-289.000.
Palfreeman, John Siegfried, to U.S. Philips Corporation. Electromechanical frequency selective devices. 3,754,192, Cl. 330-5.500.
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Parker, Ronald S.; and Reilly, Ronald, to Union Carbide Iran S.A. Dry cell having thin film seal. 3,753,781, Cl. 136-107.000.
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Pause, Kurt; and Steprath, Werner, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Energy regaining apparatus and method for accelerating and decelerating centrifuges. 3,753,351, Cl. 60-420.000.
Pauza, William Vito; and Poltonavage, Edward Michael, to AMP Incorporated. Substrate connector and terminal therefore. 3,754,203, Cl. 339-17.0cf.
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Peyrot, Jean-Pierre. Rotatable welding gun. 3,754,114, Cl. 219-125.00r.

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Philadelphia Quartz Company: *See—*
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Pinner, Bernard; and King, Edmund Charles, to Brockhouse Conveyor Bearings Limited. Bearing assemblies for the rollers of a roller conveyor. 3,753,603, Cl. 308-20.000.

Piola, Aldo; and Sabate, Giovanni. Device for controlling the standstill period of intermittently moving elements as a function of the continuous movement of mechanical members. 3,753,481, Cl. 192-142.00r.

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Plummer, Charles H., to Johnson & Johnson. Methods of making nonwoven textile fabrics. 3,753,826, Cl. 156-277.000.

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Poot, Albert Lucien; and Van Besauw, Jan Frans, to Agfa-Gevaert N.V. Photo-thermographic recording process with 5-pyrazolane. 3,753,395, Cl. 96-28.000.

Poppe, Dag; Mathiesen, Odd; and Odegaard, Gunnar Viggo, to International Standard Electric Corporation. Direction finder automatic calibration updating control system. 3,754,266, Cl. 343-119.000.

Poppe, Martin C., Jr.; Beukers, John M.; Meranda, James I.; and Williams, Christian B., to Beukers Laboratories, Inc. Loran-C third cycle identification through the use of omega. 3,754,260, Cl. 343-103.000.

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Poschenrieder, Werner; and Bendel, Hermann. Circuit arrangement for echo suppression in a voice circuit on a four-wire transmission system upon transfer to a two-wire transmission line. 3,754,105, Cl. 179-170.200.

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Raubenheimer, Johann Nicolaas. Dosing of liquids. 3,753,659, Cl. 23-267.00a.

Rauschenbach, Franz; Timpe, Wolfgang; and Waldmann, Hermann, to Siemens Aktiengesellschaft. Circuit for converting an input voltage of variable frequency into an output voltage of a predetermined, lower frequency. 3,754,180, Cl. 321-61.000.

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Reinhard, Clyde J. Input bias and signal conditioning circuit for differential amplifiers. 3,754,193, Cl. 330-30.00r.

Reinsch, Herbert; Kuhne, Gottfried; and Schirmer, Wolf, to Bosch, Robert, Photokino GmbH. Motion picture camera with adjustable shutter means. 3,753,613, Cl. 352-121.000.

Reisch, Kenneth E. Calender roll cover. 3,753,276, Cl. 29-129.500.

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Renner, Eckard, to Vereinigte Flugtechnische Werke- Fokker GmbH. Nose wheel steering. 3,753,540, Cl. 244-50.000.

Renner, Ulrich; Clauson-Kaas, Niels; and Ostermayer, Franz, to Ciba-Geigy Corporation. Pharmaceutical compositions and methods for substituted phenethyl alcohols and their esters. 3,754,090, Cl. 424-274.000.

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Restaino, Alfred Joseph, to Atlas Chemical Industries, Inc. Recovery of a water soluble polymer powder from an aqueous gel of said polymer. 3,753,962, Cl. 260-80.00m.

Revel, Maurice J. Device for randomly scanning trunks in time division switching systems. 3,754,103, Cl. 179-18.0ff.

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Roberts, John G.; Weber, Jack; and Margherio, Secondino P., to North American Rockwell Corporation. Horizontally butt fusion tube welding. 3,754,115, Cl. 219-125.00r.

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Robertshaw Controls Company: *See*—
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Robinson, Paul Harvey; and Wance, Richard Oren, to RCA Corporation. Chemical polishing of sapphire. 3,753,775, Cl. 117-213.000.

Robinson, Russell G. Sporting velocipede. 3,753,577, Cl. 280-261.000.

Rocher, Edouard Y.; and Schuster, Stanley E., to International Business Machine Corporation. Fast error recovery communication controller. 3,754,211, Cl. 340-146.1ba.

Rocket Research Corporation: *See*—
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Rockwell International Corporation: *See*—
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Rodgers, Arthur; and Weiner, Robert J., to Union Carbide Corporation. Two step porous boiling surface formation. 3,753,757, Cl. 117-22.000.

Rodway, Ronald Ernest; and Simmonds, Robin George, to Aspro-Nicholas Limited. Substituted phthalazines. 3,753,988, Cl. 260-250.00a.

Roebke, Heide: *See*—
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Roffey, Patrick; and Verge, John Pomfret, to Lilly Industries, Limited. Anti-bacterial furyl and thienyl thiazole derivatives. 3,753,982, Cl. 260-240.00a.

Rogols, Saul; High, Robert L.; and Staley, A. E., to Staley, A. E., Manufacturing Company. Phosphate modified proteinase-altered starch. 3,753,857, Cl. 195-7.000.

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Ruch, Heinz. Container and closure therefor. 3,753,511, Cl. 215-46.00h.

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Sato, Yoshimasa, to Ikegai Tekko Kabushiki Kaisha. Method of and means for facilitating a sealing of end flaps of a film. 3,753,331, Cl. 53-124.00c.

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Toman, Donald J.; and Hundley, Warren, to Tull Aviation Corporation. Microwave aircraft guidance system. 3,754,262, Cl. 343-108.00r.

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Tomioka, Kunio; and Kubota, Yohiro, to Kabushiki Kaisha Komatsu. Apparatus for transferring formed articles between presses. 3,753,489, Cl. 198-219.000.

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Toyota Jidosha Kogyo-Kabushiki Kaisha: *See—*
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Trihey, John Massey, to Johns-Manville Corporation. Helically wound tubing. 3,753,367, Cl. 72-49.000.

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Wilhelm, Billy M. Arrangement for inhibiting the unthreading of casing string. 3,753,464, Cl. 166-242.000.

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42.5 3,753,300

CLASS 37

58 3,753,303

CLASS 40

125R 3,753,305
128 3,753,306

CLASS 42

25 3,753,307

CLASS 43

4 3,753,308
17.5 3,753,309
42.39 3,753,310
43.14 3,753,311

CLASS 44

72 3,753,670

CLASS 46

157 3,753,312
202 3,753,313

CLASS 47

34.11 3,753,314
38 3,753,315

CLASS 48

210 3,753,671

CLASS 49

31 3,753,316
35 3,753,317

CLASS 51

11 3,753,318
42 3,753,319
73R 3,753,320
101R 3,753,321
284 3,753,322

CLASS 52

169 3,753,323
377 3,753,324
489 3,753,325
731 3,753,326
742 3,753,327
745 3,753,328

CLASS 53

24 3,753,329
123 3,753,330
124C 3,753,331
183 3,753,332
186 3,753,333

CLASS 54

80 3,753,334

CLASS 55

29 3,753,335
233 3,753,337
242 3,753,336

CLASS 56

17.5 3,753,338
119 3,753,339
200 3,753,340
400.04 3,753,341

CLASS 57

71 3,753,342
77.45 3,753,343
105 3,753,344

CLASS 60

36 3,753,345
105 3,753,347
219 3,753,348
227 3,753,349
403 3,753,350
547 3,753,346

CLASS 61

10 3,753,352
25 3,753,353
35 3,753,354
65 3,753,355

CLASS 62

56 3,753,356

CLASS 65

3 3,753,672
106 3,753,673
114 3,753,674

CLASS 68

150 3,753,358

CLASS 70

19 3,753,359
39 3,753,360
185 3,753,361

CLASS 71

1 3,753,675
67 3,753,362
3,753,676
3,753,677
88 3,753,678
98 3,753,679
120 3,753,680

CLASS 72

49 3,753,367
50 3,753,363
71 3,753,364
76 3,753,365
214 3,753,370
409 3,753,366
475 3,753,368

CLASS 73

15.4 3,753,369
344 3,753,371
354 3,753,372
398C 3,753,373

CLASS 74

5.7 3,753,374
422 3,753,378
498 3,753,375
665GA 3,753,376
856 3,753,377

CLASS 75

1 3,753,681
3 3,753,682
3,753,683
3,753,684
9 3,753,685
21 3,753,686
33 3,753,687
43 3,753,688
51 3,753,689
68R 3,753,690
101R 3,753,691
115 3,753,692
128A 3,753,693
135 3,753,694
143 3,753,695
157.5 3,753,696
171 3,753,697
3,753,698
174 3,753,699
175.5 3,753,700
3,753,701
178R 3,753,702
200 3,753,703
208R 3,753,704

CLASS 83

174 3,753,379
315 3,753,380
364 3,753,381

CLASS 89

1.815 3,753,382

CLASS 90

11D 3,753,383
24R 3,753,384
31 3,753,385

CLASS 92

5 3,753,386

CLASS 93

1.5 3,753,709

CLASS 95

10CE 3,753,387
10R 3,753,388
11R 3,753,390
11 3,753,389
13 3,753,392
36 Re.27,739
53 3,753,391
94G 3,753,394
94R 3,753,393

CLASS 96

1PC 3,753,708
1R 3,753,705
3,753,706
27 3,753,707
28 3,753,395
36.1 3,753,710
3,753,711
38.2 3,753,712
41 3,753,713
45.1 3,753,714
86P 3,753,715
87A 3,753,716
88 3,753,717
3,753,718
100 3,753,719
115R 3,753,720
130 3,753,721

CLASS 99

2ND 3,753,722
9 3,753,723
30 3,753,724
54 3,753,725
65 3,753,726
81 3,753,727
3,753,728
82 3,753,729
83 3,753,730
91 3,753,732
92 3,753,733
3,753,734
100P 3,753,735
100R 3,753,736
103 3,753,731
113 3,753,737
140R 3,753,738
141A 3,753,739
176 3,753,740
187 3,753,741
450 3,753,396
491 3,753,397

CLASS 100

53 3,753,398
100 3,753,400
145 3,753,399

CLASS 101

45 3,753,401

CLASS 102

22 3,753,402
28R 3,753,403

CLASS 104

17R 3,753,404
3,753,405
112 3,753,406

CLASS 106

1 3,753,742
52 3,753,743
56 3,753,744
57 3,753,745
58 3,753,746
3,753,747
90 3,753,748
93 3,753,749
106 3,753,750
120 3,753,751
277 3,753,752
288B 3,753,753
3,753,754

CLASS 108

53 3,753,407

CLASS 111

6 3,753,409
7.1 3,753,408

CLASS 112

199 3,753,410
210 3,753,411
222 3,753,412

CLASS 114

65 3,753,413
75 3,753,414
126 3,753,415
221R 3,753,416

CLASS 116

121 3,753,417

CLASS 117

3.1 3,753,755
8 3,753,756
22 3,753,757
25 3,753,758
33.5L 3,753,759
36.2 3,753,761
37LE 3,753,760
51 3,753,762
62 3,753,763
68 3,753,764
76F 3,753,765
97 3,753,766
100A 3,753,767
107.2 3,753,768
122H 3,753,769
138 3,753,770
138.8F 3,753,771
139.5F 3,753,772
161UA 3,753,773
212 3,753,774
213 3,753,775

CLASS 118

63 3,753,418
637 3,753,419
673 3,753,420

CLASS 119

29 3,753,421
3,753,422

CLASS 122

248 3,753,423

CLASS 123

27GE 3,753,424
73PP 3,753,425
139E 3,753,426
148E 3,753,428
3,753,429
198DB 3,753,427

CLASS 125

14 3,753,430

CLASS 126

38 3,753,431

CLASS 128

2F 3,753,432
2.1B 3,753,433
2.1Z 3,753,434
66 3,753,435
145.8 3,753,436
263 3,753,437
335 3,753,438
350R 3,753,439

CLASS 131

140P 3,753,440
235R 3,753,441

CLASS 134

3 3,753,776
6 3,753,777

CLASS 136

24 3,753,778
31 3,753,779
86B 3,753,780
107 3,753,781
120FC 3,753,782
134R 3,753,783
145 3,753,784
161 3,753,785
3,753,786
221 3,753,787

CLASS 137

15 3,753,442
255 3,753,443
268 3,753,444
322 3,753,445
484.8 3,753,446
596 3,753,447
609 3,753,448
630.19 3,753,449
823 3,753,304

CLASS 139

110 3,753,451
191 3,753,450
311 3,753,452

CLASS 141

387 3,753,453

CLASS 145

63 3,753,455

CLASS 148

2 3,753,788
3 3,753,789
3,753,790
11.5R 3,753,791
13 3,753,792
3,753,793
15.5 3,753,799
32 3,753,794
3,753,795
36 3,753,796
50E 3,753,454
131 3,753,797
3,753,798
162 3,753,800
171 3,753,801
174 3,753,802
175 3,753,803
177 3,753,804
187 3,753,805
188 3,753,806
3,753,807
189 3,753,808
3,753,809

CLASS 149

8 3,753,810
19 3,753,811
3,753,812
3,753,813

CLASS 152

225 3,753,456

CLASS 156

3 3,753,814
6 3,753,815
11 3,753,816
18 3,753,817
19 3,753,818
69 3,753,819
73 3,753,820
96 3,753,821
101 3,753,822
145 3,753,823
227 3,753,824
277 3,753,825
3,753,826
307 3,753,827
333 3,753,828
367 3,753,829
382 3,753,830
479 3,753,831
499 3,753,832
504 3,753,833
506 3,753,834
3,753,835
521 3,753,836
552 3,753,837
555 3,753,838
577 3,753,839

CLASS 160

331 3,753,457
354 3,753,458

CLASS 161

1 3,753,840
6 3,753,841
43 3,753,843
57 3,753,842
3,753,844
92 3,753,845
111 3,753,846
116 3,753,847
120 3,753,848
162 3,753,849
214 3,753,850

CLASS 162

15 3,753,851

CLASS 164

89 3,753,459
131 3,753,460
282 3,753,461

CLASS 165

23 3,753,462
47 3,753,463

CLASS 166

242 3,753,464
252 3,753,465

CLASS 169

2R 3,753,466

CLASS 172

3 3,753,467

CLASS 173
44 3,753,468
163 3,753,469

CLASS 174
102A 3,754,094
126CP 3,754,095

CLASS 175
292 3,753,470
320 3,753,471

CLASS 176
19R 3,753,852
38 3,753,853
67 3,753,854
78 3,753,855
87 3,753,856

CLASS 177
210 3,753,472

CLASS 178
5.4ST 3,754,096
3,754,097
69.5R 3,754,098

CLASS 179
15AQ 3,754,100
15BS 3,754,102
15BT 3,754,099
15FS 3,754,101
18FF 3,754,103
100.2P 3,754,104
170.2 3,754,105

CLASS 180
19H 3,753,473
91 3,753,475
104 3,753,474

CLASS 188
73.2 3,753,476

CLASS 192
41A 3,753,477
85AA 3,753,478
89A 3,753,479
141 3,753,480
142R 3,753,481

CLASS 195
7 3,753,857
31F 3,753,858
47 3,753,859
65 3,753,860
68 3,753,861
96 3,753,862
103.5C 3,753,863
103.5R 3,753,864
127 3,753,865

CLASS 197
6.6 3,753,482
127R 3,753,483

CLASS 198
20R 3,753,484
31AC 3,753,485
131 3,753,486
177R 3,753,487
208 3,753,488
219 3,753,489

CLASS 200
14 3,754,106
38A 3,754,107
153G 3,754,108

CLASS 201
6 3,753,866

CLASS 202
262 3,753,867

CLASS 204
1T 3,753,868
2 3,753,869
34 3,753,870
35R 3,753,871
41 3,753,872
43G 3,753,874
43 3,753,873
56R 3,753,875
59R 3,753,876
106 3,753,877
129.1 3,753,878
129.2 3,753,879
129.5 3,753,880
130 3,753,881
140 3,753,882
144.5 3,753,883
162XA 3,753,884
181 3,753,885
186 3,753,886
195M 3,753,887
197 3,753,888
198 3,753,889
224 3,753,890

CLASS 206
62P 3,753,490

CLASS 208
62 3,753,891
102 3,753,892
164 3,753,893
216 3,753,894
310 3,753,895
3,753,896

CLASS 209
459 3,753,491

CLASS 210
1QF 3,753,505
5 3,753,897
33 3,753,898
3,753,899
45 3,753,900
49 3,753,901
54 3,753,902
96 3,753,492
140 3,753,493
170 3,753,494
206 3,753,495
242 3,753,496
3,753,497
350 3,753,498
3,753,499
446 3,753,500
490 3,753,501

CLASS 212
4 3,753,502

CLASS 213
61 3,753,503
166 3,753,504

CLASS 214
16R 3,753,506
16.4R 3,753,507
130R 3,753,508
309 3,753,509

CLASS 215
9 3,753,510
46A 3,753,511

CLASS 219
9.5 3,754,109
10.49 3,754,110
10.55 3,754,111
10.61 3,754,112
107 3,754,113
125R 3,754,114
3,754,115
222 3,754,116
383 3,754,117
523 3,754,118

CLASS 220
43R 3,753,512

CLASS 221
1 3,753,513
129 3,753,514
191 3,753,515

CLASS 222
95 3,753,516
383 3,753,518

CLASS 224
5C 3,753,519
42.06 3,753,520

CLASS 226
64 3,753,521
97 3,753,517
141 3,753,522

CLASS 227
88 3,753,523
132 3,753,524

CLASS 228
29 3,753,525

CLASS 235
61.11E 3,754,120
61.6R 3,754,119
92DN 3,754,122
92EA 3,754,121
151.11 3,754,124
151.12 3,754,125
151.3 3,754,123
151.33 3,754,126
153AC 3,754,127
156 3,754,128
201 3,754,129

CLASS 236
99 3,753,526

CLASS 239
11 3,753,527
61 3,753,528
110 3,753,529

CLASS 240
6.43 3,754,130
7.1G 3,754,131
10R 3,754,132
11.2E 3,754,133
41.37 3,754,134
46.59 3,754,135
73R 3,754,136

CLASS 241
34 3,753,530

CLASS 242
55.19A 3,753,533
68.3 3,753,531
83 3,753,532
118.11 3,753,534
152.1 3,753,535

CLASS 244
1SD 3,753,536
3.12 3,753,537
3,753,538
5 3,753,539
50 3,753,540
137R 3,753,541

CLASS 248
23 3,753,542
313 3,753,543

CLASS 249
141 3,753,544
219R 3,753,545

CLASS 250
199 3,754,142
204 3,754,143
211R Re.27,737
213R 3,754,144
218 3,754,145
219DF 3,754,146
302 3,754,138
326 3,754,137
340 3,754,139
507 3,754,140
3,754,141

CLASS 251
5 3,753,548
9 3,753,546
120 3,753,547
305 3,753,549

CLASS 252
8.5A 3,753,903
8.55D 3,753,904
28 3,753,906
33.4 3,753,905
46.7 3,753,907
47.5 3,753,908
62.1 3,753,909
3,753,910
62.9 3,753,911
77 3,753,912
89 3,753,913
95 3,753,914
3,753,915
107 3,753,916
182 3,753,917
3,753,918
188.3 3,753,919
301.1R 3,753,920
301.2R 3,753,921
316 3,753,922
378R 3,753,923
389R 3,753,924
408 3,753,925
415 3,753,926
428 3,753,927
429B 3,753,928
451 3,753,929
527 3,753,930

CLASS 254
133 3,753,550
150 3,753,551
172R 3,753,552

CLASS 256
1 3,753,553

CLASS 259
8 3,753,554

CLASS 260
2BP 3,753,931
2.5AE 3,753,933
2.5R 3,753,932
17.3 3,753,934
22CA 3,753,935
27R 3,753,936
28.5D 3,753,937
3,753,938
29.6RW 3,753,940
29.6Z 3,753,939
29.7N 3,753,941
30.2R 3,753,998
30.2 3,753,942
32.6A 3,753,943
33.2R 3,753,944
45.85H 3,753,945
47CZ 3,753,946
47EN 3,753,947
49 3,753,948
3,753,949
3,753,950
63BB 3,753,951
63R 3,753,952
75NP 3,753,953
78A 3,753,957
78L 3,753,955
78.4D 3,753,954
78.4R 3,753,956
78.5BB 3,753,959
78.5R 3,753,958
80M 3,753,962
80.78 3,753,960
3,753,961
82 3,753,963
88.1R 3,753,965
88.2R 3,753,964
92.8W 3,753,966
94.3 3,753,967
97.6 3,753,968
112.5 3,753,969
3,753,970
124R 3,753,971
209R 3,753,972
210K 3,753,973
210.5 3,753,974
3,753,975
233.3A 3,753,976
239.55R 3,753,979
239.57 3,753,980
239.9 3,753,978
240A 3,753,982
240D 3,753,981
240J 3,753,983
3,753,984
243C 3,753,977
247.7G 3,753,985
249.6 3,753,986
250A 3,753,988
250R 3,753,987
3,753,989
270R 3,753,990
283SY 3,753,991
284 3,753,992
286R 3,753,993
288R 3,753,994
293.53 3,753,995
294.8F 3,753,996
296R 3,753,997
306.6R 3,753,999
307C 3,754,000
309 3,754,001
309.6 3,754,002
326.13A 3,754,004
326.5R 3,754,003
328 3,754,005
332.2A 3,754,006
340.5 3,754,007
360 3,754,008
408 3,754,009
413 3,754,010
429.1 3,754,011
429.7 3,754,012
440 3,754,013
453PC 3,754,014
456P 3,754,015
465.1 3,754,017
465.3 3,754,018
468K 3,754,016
479R 3,754,019
491 3,754,020
515A 3,754,021
518R 3,754,022
521A 3,754,023
531R 3,754,024
533R 3,754,025
534M 3,754,026
534R 3,754,027
535R 3,754,028
539A 3,754,029
553DA 3,754,030
559A 3,754,031
566R 3,754,032
567.6M 3,754,033
578 3,754,034
584R 3,754,035
586A 3,754,036
587 3,754,037
599 3,754,038
611F 3,754,039
613D 3,754,040
644 3,754,041
3,754,042
653 3,754,043
654D 3,754,044
672NC 3,754,045
677A 3,754,047
677R 3,754,046
680B 3,754,048
681.5R 3,754,049
3,754,050
683.3 3,754,051
683.61 3,754,052
823 3,754,053
860 3,754,054
879 3,754,055
892 3,754,056
901 3,754,057
949 3,754,058

CLASS 261
44R 3,753,555

CLASS 264
.5 3,754,059
3C 3,754,060
3D 3,754,061
4 3,754,062
22 3,754,063
40 3,754,064
70 3,754,065
71 3,754,066
89 3,754,067
97 3,754,068
131 3,754,069
272 3,754,070
3,754,071

CLASS 269
97 3,753,556
328 3,753,557

CLASS 270
67 3,753,558

CLASS 271
3 3,753,559
9 3,753,560

CLASS 273
49 3,753,561
130F 3,753,562
186A 3,753,564
186C 3,753,563
213 3,753,565

CLASS 274
4B 3,753,567
4G 3,753,566
11R 3,753,568

CLASS 277
112 3,753,569

CLASS 279
2 3,753,570

CLASS 280
11.35T 3,753,572
13.35K 3,753,571
106.5 3,753,573
150AB 3,753,576
261 3,753,577
276 3,753,578
400 3,753,579
443 3,753,580
478A 3,753,574

CLASS 283
56 3,753,581

CLASS 285
137R 3,753,575
305 3,753,582

CLASS 287
54A 3,753,583
85A 3,753,584
898.36R 3,753,585

CLASS 290
1 3,754,151
53 3,754,147

CLASS 292
322 3,753,586

CLASS 294
7 3,753,587
82R 3,753,588
87R 3,753,589

CLASS 296
23R 3,753,590
35A 3,753,591

CLASS 297
284 3,753,592

CLASS 298
10 3,753,593

CLASS 299
4 3,753,594
43 3,753,595
3,753,596
81 3,753,597

CLASS 303
21F 3,753,598
3,753,599
3,753,600
84A 3,753,601

CLASS 306
33 3,753,602

CLASS 307
10AT 3,754,148
117 3,754,149
149 3,754,150

CLASS 308
20 3,753,603
160 3,753,604
187 3,753,605

CLASS 310
8.1 3,754,152
9.1 3,754,153
30 3,754,154
156 3,754,155

CLASS 312
223 3,753,606

CLASS 313
63 3,754,156
85S 3,754,157

CLASS 315
11 3,754,158
31R 3,754,159
97 3,754,160
169TV 3,754,161
241P 3,754,162

CLASS 317
9 3,754,174
14D 3,754,163
134 3,754,164
141S 3,754,165
148.5B 3,754,166
151 3,754,167
234R 3,754,168
3,754,169
235R 3,754,170
3,754,171
246 3,754,172
259 3,754,173

CLASS 318
138 3,754,175
266 3,754,176
480 3,754,177
572 3,754,178
665 3,754,179

CLASS 321
61 3,754,180

CLASS 323
1 3,754,181
17 3,754,182
22SC 3,754,183
102 3,754,184

CLASS 324
57R 3,754,185
65R 3,754,186

CLASS 325
37 3,754,187
56 3,754,188
392 3,754,189

CLASS 330
4.3 3,754,190
5 3,754,191
5.5 3,754,192
30R 3,754,193

CLASS 331
1R 3,754,194
94.5 3,754,195

CLASS 332
9R Re.27,738

CLASS 333
8 3,754,196
33 3,754,197
73S 3,754,198

CLASS 335
275 3,754,199

CLASS 338
20 3,754,200
28 3,754,201

CLASS 339
14P 3,754,202
17CF 3,754,203
32R 3,754,204
42 3,754,205
90R 3,754,206

CLASS 340
3D 3,754,207
8L 3,754,208
40 3,754,209
3,754,210
146.1BA 3,754,211
146.3K 3,754,212
147MD 3,754,213
149R 3,754,214
151 3,754,215
172.5 3,754,216
3,754,217
3,754,218
237R 3,754,219
239R 3,754,220
255 3,754,221
258A 3,754,222
258C 3,754,223
274 3,754,224
280 3,754,225
3,754,226
286 3,754,227
324AD 3,754,228
3,754,229
324M 3,754,230
325 3,754,231
347AD 3,754,232
347DA 3,754,233
3,754,234
3,754,235
3,754,236
347DD 3,754,237
3,754,238
347NT 3,754,240
347SY 3,754,241
347P 3,754,239
373 3,754,242
378R 3,754,243
381 3,754,244
3,754,245
420 3,754,246

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6.5LC	3,754,250	756	3,754,271		CLASS 352		CLASS 410	210.5	3,754,074	319	3,754,091
6.5	3,754,252	778	3,754,272	109	3,753,612			341	3,754,077	326	3,754,093
6.8LC	3,754,251	786	3,754,273	121	3,753,613	36	3,753,630	343	3,754,075	328	3,754,092
7ED	3,754,253	δ54	3,754,274	142	3,753,614		CLASS 417	345	3,754,076	363	3,753,638
7.7	3,754,254		CLASS 346		CLASS 355	1	3,753,626	359	3,754,078	387	3,753,639
18A	3,754,255	1	3,754,275	8	3,753,615	207	Re.27,740	479	3,754,079	392	3,753,640
18E	3,754,256	7	3,754,276		CLASS 356	213	3,753,627	489	3,754,080	450	3,753,641
100TD	3,754,257	23	3,754,277	28	3,753,616	310	3,753,628	520	3,754,081		CLASS 425
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